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V.G.A

THE EDISON MONTHLY

Vol 9
June 19
May 1

JUNE

1916

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

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Service	Required H P	Service	Required H P
Crimping machine	.5	Goodyear channeler	.06
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Sandpaper wheel and blower	.3	Buzzel trimming machine	1.5
Grinder and buffer	.5	Union twin edge setter	1.
Buffing machine	.1	Goodyear welt machine	.4
Hadaway stitch separator	.3	McKay stitcher	.6
Double buffer and blower	.5	Staple fastening machine	.2
Special splitter	.6	Sole laying machine	1.5
Leather roller	.2	Beating out machine	.2
Stewart bus counter molder	.6	Chicago wire fastener	.3
Sole rounder	.8	National heeling machine	.5
Stanley leather splitter	.6	Mayo heeling machine	3.
Fifield tip skiver	.3	McKay heel trimmer	2.
Smith stiffening skiver	.1	Consolidated hand laster	.5
Dinker	.1	Adams sole cutter	2.
Scorer	.1	4 ft. leather knife	2.
Knox beam dinker	.2	4 ft. die press	2.
Knox end splitter	.6	Lasting machines	.2
Small skiver	.3	Stick prick machines	3.
Knox twin molder	.8	Shoe sewing machines about 6 to the horsepower	2.
Goodyear channel hip turner	.1		
Fisher channel turner	.1	Leveler	2.

Manufacturers and Agents

Arc Lamps

Cooper Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Bklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Smith-Eldridge Co Agents)—544 W 30th St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Motors Truck Co—236 W 59th St (C)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey St Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—208-9 West St (I)
Mercury Mfg Co—1834 Broadway (I)
Ohio Electric Car Co (Robt W Schuette Agent)—236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—1838 Broadway (C&P)
Waverley Co The (Poertner Motor Car Co Agents)—1759 Broadway (C & P)

Manufacturers and Agents (Continued)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Bronxville N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Edison Thomas A Inc—141 Lakeside Avenue Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Bronxville N Y
Westinghouse Electric & Mfg Co—165 B'way

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—527 W 23d St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42d St
Phila Storage Battery Co—American Building B'way and 58th St
Storage Battery Supply Co—239 East 27th St
United States Light & Heat Co—16-24 W 61st St
Willard Storage Bat Co The—228-30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303-305 Fifth Avenue
Hospital Supply Co The—53-55 5th Ave
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Av
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Bway Cambridge Mass
Meyrowitz Mfg Co—31st St and 1st Ave
Metropolitan Eng Co—30 E 42d St
Neel-Armstrong Co—2017 Fifth Ave
Pittsburgh Electric Specialties Co—412 8th Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—5th Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St, 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 East 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 West 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 Broadway
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 West Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—1790 Broadway
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Marelli & Co Ercole—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St
Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—23 E 22d St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—1790 Broadway
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
H W Johns-Manville Co—Madison Ave & 41st St
Kandem Electric Co Inc—49 E 21st St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 Broadway

Globes—Reflectors

Dealing William—1 Hudson St.
Fox Elec Corp The—7 E 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—71 West 23rd St
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42nd St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Johns-Manville Co H W—Mad Ave & 41st St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn, N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—1790 Broadway
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—624 Broadway
Pittsburgh Elec Specialties Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio
Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—136 Liberty St

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St
Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Spring 9890
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
*124 W 42d St	Bryant 5262
*151 East 86th St	Lenox 7780
*27 East 125th St	Harlem 4020
*362 East 149th St	Melrose 9900

*Open until midnight

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Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts west of the Bowery and south of Catherine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street east of and including the Bowery, and north of and including Catherine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

463 West 23d Street

VOLUME IX JUNE, 1916 NUMBER 1

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The Edison Monthly
Published by
The New York Edison Company
General Offices
Irving Place and Fifteenth Street
New York City

N F Brady, President
Joseph Williams, Treasurer
Lewis B Gawtry, Secretary

Railroad electrification is of more than passing significance to New Yorkers. To the substitution of electricity for steam this city owes its two great terminal developments. The wonderful Pennsylvania Station and the tubes connecting it with the South and West on one side and with Long Island and—via the Hell Gate Bridge—with New England on the other, would still be unrealized were it not for the application of electricity to railroad operation.

* * *

In the case of the Grand Central Terminal, the illustration is not quite so sharply drawn, although here the magnificent marble structure and the two levels of station platforms are hardly compatible with smoke-belching engines. With these two illustrations must be considered the projected West Side improvement, wherein Riverside Drive is to be restored, and the lower sections of the city are to be freed of their present street-surface freight tracks.

In the two terminal developments, the electrical zone extends in the case of the Pennsylvania Road to a point just this side of Newark. From the Grand Central Station electric locomotives operate to Harmon, thirty miles away on the Central lines, and to New Haven, Connecticut, a distance of seventy-three miles on the New Haven lines.

Philadelphia, Baltimore and Washington, Albany, Buffalo and Niagara Falls, Boston and other points in New England, have been considered beyond the capacity of electric engines—a belief which is now dispelled by the announcement from the West of a stupendous piece of railway electrification.

* * *

Over the mountain division of the Chicago, Milwaukee and St Paul Railroad, for a distance exceeding 400 miles, great transcontinental trains are hauled by whirring motors. This stretch of railroad highway crosses the Continental Divide between Harlowton, Montana, and Avery, Idaho. Here are encountered not only the heavy grades of the Rockies, but in winter the extremely low temperature that has been perhaps as great an obstacle to steam operation as the snowdrifts themselves. The mighty electric engines designed for this service not only insure a maintenance of schedule in winter, but add a degree of comfort and cleanliness to summer travel never realized behind coal-burning engines.

* * *

Yet important as are the immediate and local advantages of this example of railroad enterprise, its greater significance and its true lesson is found in what it portends. With the accomplishment of this task, railroad electrification is taken from the limits of terminal and suburban service and is shown to be quite suitable for trunk line operation. We may now look for a speedy realization of the dream of a trip of a day's duration that shall not be marred by smoke and cinders and the dirt which have come to be looked upon as necessary adjuncts to present-day travel.

⁂

Almost since the beginning of the European war, there have been reports on increasing this country's trade with South America. The electrical industry was especially singled out as promising, since most goods of that nature then in use in the Latin American republics were of German origin.

⁂

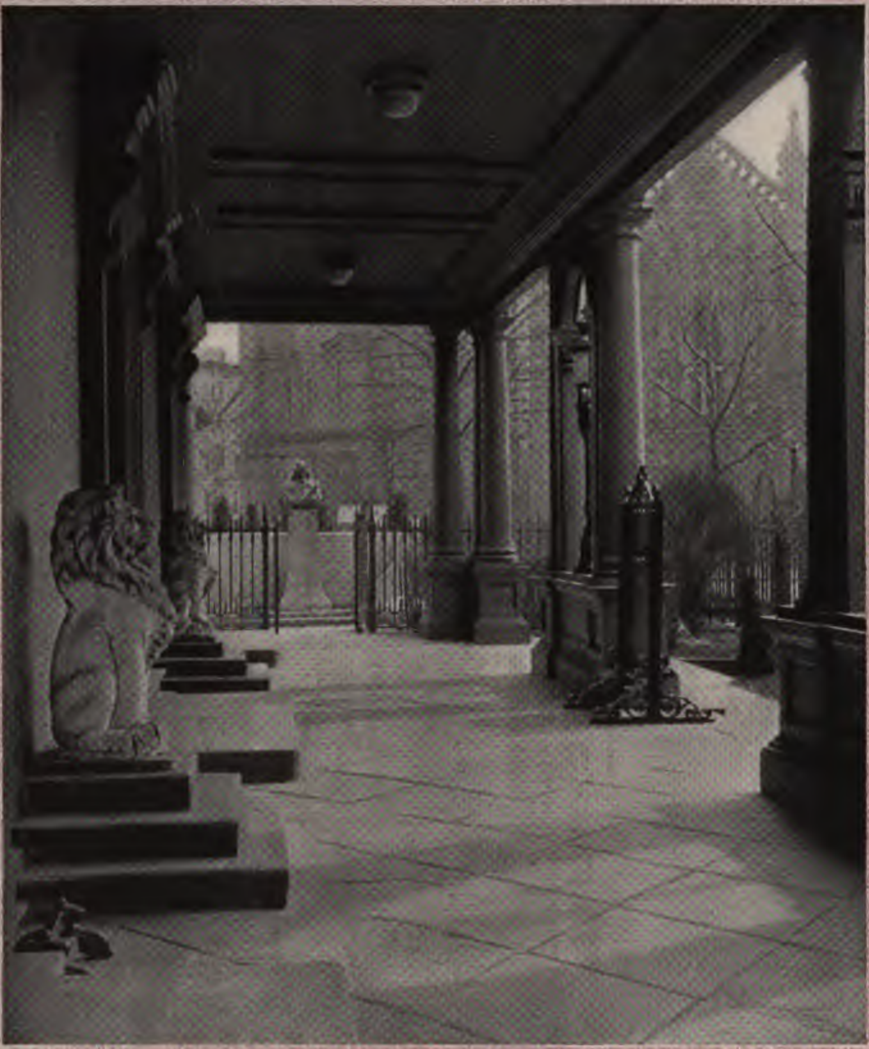
While the trade requirements of the southern continent have been fully discussed, those of Central America, lying more closely at hand, are rarely mentioned. Yet in 1910 the imports of the five Isthmian republics passed the $20,000,000 mark. No statistics are available to show what proportion of this sum was devoted to electrical merchandise, yet without doubt this formed a considerable item, for primitive as are these countries in many ways, electricity is in common use in the larger cities. The ox-cart may be the national vehicle of Costa Rica, but the patient beasts trudge their way beside electric street lamps; houses may be one and two-story adobe affairs, of "earthquake" construction, but even the poorer city dwellers cook by electricity.

Some explanation of these contrasts is needed. Central America, while rich in mahogany and dye-woods, must import practically every lump of coal. Consequently this luxury is used chiefly by the railroads. On the other side of the equation, Central America is rich in water-power, for the same chain of mountains that farther south becomes the Andes runs throughout the length of the Isthmus. With the price of coal practically prohibitive and with wood the only other fuel, it is not surprising to find the principal cities thriving on electricity.

⁂

Take, as an example, the capital of Costa Rica, San Jose, a progressive city, although by no means the most populous of the Central American towns. San Jose has only 40,000 inhabitants, yet some of the stores present displays of electric lighting and cooking apparatus not unworthy of New York City. Little houses of two or three rooms may abound, yet one finds electric lights. Indeed it is reckoned that in most houses renting for $15 a month or over, electric cooking also prevails. The heating question is largely settled by a semi-tropical climate, but hot water remains a problem except where electricity has been introduced. In one of the San Jose hotels (and by no means the newest) hot water for the large public bathroom is supplied by an electric heater and is available at all hours.

A visitor in San Jose in 1909 noted with regret that most of the commerce was in the hands of Europeans. Travelers recently returned report that American made goods, and especially American made electrical wares, are now seen on every hand.



Photographic Bureau of The New York Edison Company

Guarded by the Traditional Lions and Presided Over by a Bust of the Redoubtable Stuyvesant Himself, St Mark's Porch Looks out with Secure Complacency upon the Vicissitudes of Modern Life

St Mark's in the Bouwerie

ST MARK'S-IN-THE-BOUWERIE; mention of the quaint old name calls forth traditions enriched and mellowed by time; traditions that hark back to the days of spacious fireplaces, of velvet breeches and silk stockings, of courtly colonial manners, of stage coach, of Hamilton and Burr and a host of incidents of the period immediately following the Revolution.

And to those who possess a genuinely keen interest in the fine old church and who are given to delving somewhat deeply into the history of things, St Mark's-in-the-Bouwerie brings out associations from an even more distant past. The picture goes back to a time when doughty old Dutch burghers moved slowly along the grassy banks of the *Heeren Gracht* of a sunny Sunday morning, smoking their great porcelain-bowled pipes as they proceeded on their way to devotion in Director Stuyvesant's chapel. For St Mark's has not been St Mark's always, nor yet has it been of the Protestant Episcopal faith. In the beginning, somewhere between the years 1648 and 1660, it was a Dutch Reformed church and it continued so, long after Nieuw Amsterdam became New York. In fact it did not become of the Episcopal persuasion until after the formation of Trinity Corporation, and it was largely through the efforts of this organization that the present building was erected in 1795.

Few changes have taken place during the century or longer of the existence of the edifice, and what alterations have been made from the original are being restored wherever possible. Chairs, rails, and similar furnishing, discarded a generation or two back, are being brought down from dusty attics and installed in their former places. The notable exceptions to this rule are the lighting fixtures. St Mark's has seen a variety of these, ranging from candle brackets and oil lamps to the present electric equipment. It is safe to say that whatever other antiques may be revived, the parishioners will not revert to the old methods of lighting.

While St Mark's cannot lay claim to being the oldest Episcopal church in New York, it can be looked upon as the oldest church organization on Manhattan Island, with none other than the renowned Petrus Stuyvesant as its founder. Indeed when the sturdy old Governor of Nieuw Amsterdam died in 1672, his body was placed in a vault beneath his chapel, where it remains to this day.

Established by Governor Stuyvesant

Established by Governor Stuyvesant as a chapel for the devotion of his family, his servants and his slaves, the church had its beginning on the site of the present edifice in Stuyvesant's Bouwerie. The chapel was also meant for the use of the burghers of near-by hamlets and the steadily developing town on the lower end of Manhattan Island. At that time there was only one clergyman of the Dutch Reformed faith in Nieuw Amsterdam and he was kept quite

Photographic Bureau of The New York Edison Company

The Interior of the Old Edifice Resembles the Famous Colonial Churches of a Century Ago

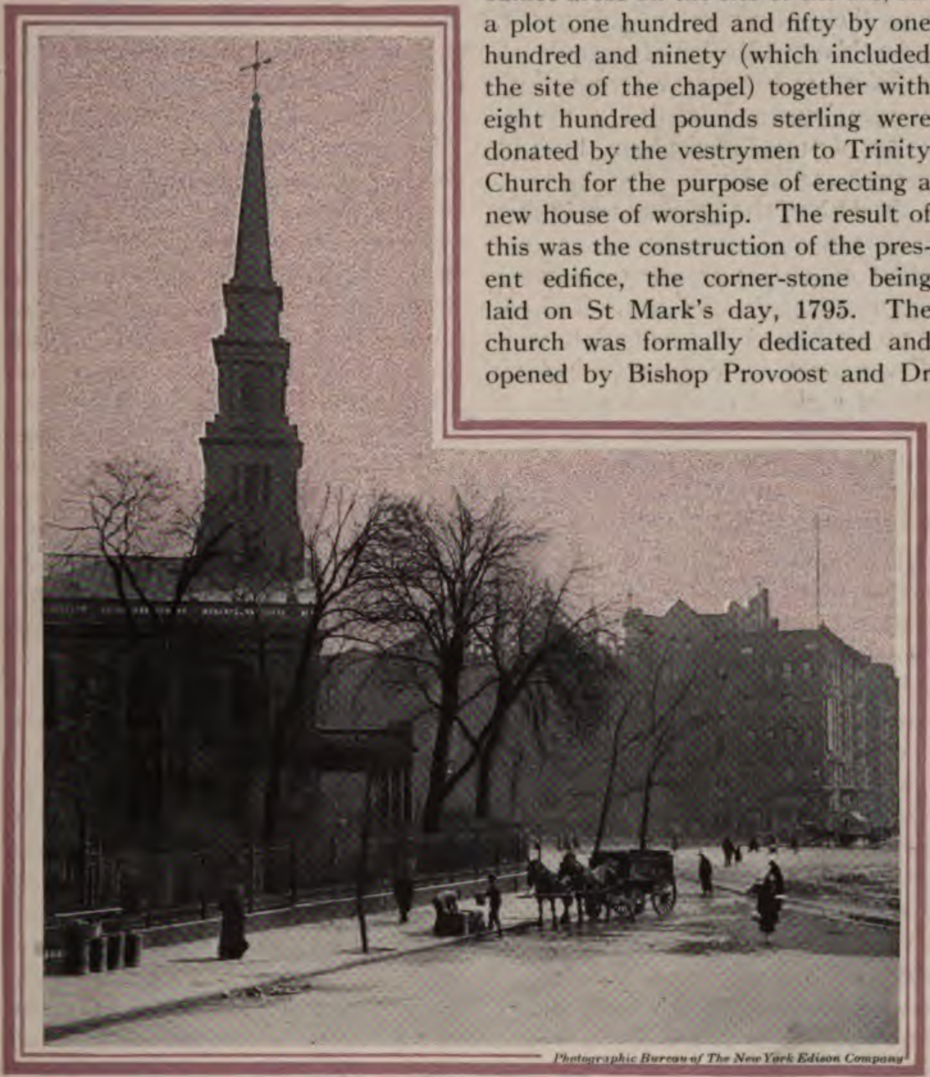
busy ministering to the parishioners of the church located inside the fortifications. He had little or no time to devote to the interests of the newer parish. This being the case the only other man available to occupy Director Stuyvesant's pulpit was the ever dignified Harmanus Van Hoboken, the village schoolmaster and *ziekentrooster*. Hermanus served the office well and the burghers of Nieuw Amsterdam worshipped under his guidance until 1660.

At about this time Dominie Henricus Selyns, an itinerant preacher, arrived from Holland and after visiting Esopus and Fort Orange (now Kingston and Albany respectively) came down the Hudson and established himself in a little church in Breuckelen, then a settlement of 134 people on Long Island. It was difficult indeed for this little community to support their pastor, and Stuyvesant arranged to contribute 250 guilders to the annual income of the dominie if he would preach Sunday afternoons in the chapel in the Bouwerie. Thus did the chapel, which was later to become St Mark's, receive its first pastor. Still later the chapel possessed a pastor all its own in the person of Dominie Samuel Magapolrnsis.

A crisis came when the Duke of York took possession of the grant of land made to him by his brother, Charles II of England. This territory extended from the Connecticut to the Delaware River and the settlement at Nieuw Amsterdam was about the most important within its confines.

The story of its capture by the English is worth recounting. Expeditionary forces were landed at Gravesend Bay and certain demands made upon Director Stuyvesant. It is to the old warrior's credit that he determined to resist the redcoats, but it is more to the credit of his lieutenants that they persuaded him to surrender the colony with the provision that the Dutch could reserve for themselves security of person and property, inheritance, customs, conscience and religion. The terms of capitulation were accepted and in due course Stuyvesant and 250 others swore allegiance to the Duke of York and Charles II.

But although the terms of the surrender left the way clear for a continuance of the Dutch interests and customs, a decade or two showed the yielding to the English influence. Soon the Honorable Petrus passed away, and later on his widow. The little chapel held to its beliefs for many years, but for all its efforts, the succeeding generations of Dutch descendants gradually turned to the Episcopal Church. Petrus Stuyvesant third was a vestryman in Trinity, and so, neglected even by the descendants of its founder, the Dutch Reformed Chapel finally passed out of existence. Through the efforts of the same Petrus Stuyvesant third a new edifice arose on the site of the old, for a plot one hundred and fifty by one hundred and ninety (which included the site of the chapel) together with eight hundred pounds sterling were donated by the vestrymen to Trinity Church for the purpose of erecting a new house of worship. The result of this was the construction of the present edifice, the corner-stone being laid on St Mark's day, 1795. The church was formally dedicated and opened by Bishop Provoost and Dr



Photographic Bureau of The New York Edison Company

St Mark's-in-the-Bouwerie. This Structure houses the Oldest Church Organization in Manhattan Island. Electric Service for the Church and Parish Buildings is Supplied by The New York Edison Company

Benjamin Moor (later the second Bishop of New York).

Great changes were taking place in New York at this time. The colonies had freed themselves of the rule of Britain and were a thriving republic. New York was rapidly becoming an important commercial and political centre, and traces of Dutch ancestry were being gradually obliterated. From this combination of early Dutch traditions and the more recent English practices was developing the foundation of true Americanism, both in customs and in ideals.

Yet with all these changes and those which followed, the church has retained a position among the leading congregations in the city. Indeed, from an historical standpoint, it is of even greater importance, for many men of national prominence have at some time or other been associated with it.

A Community Centre

But in spite of historical prominence and distinguished past St Mark's does not rest upon the honors accumulated through two centuries,—today it is a place of tireless activity, a community centre in the crowded East Side.

Most conspicuous of the St Mark's interests is its settlement work in the neighboring tenement districts. St Mark's Memorial Chapel and Church House, facing Tompkins Square, is devoted entirely to settlement work, and educational and vocational courses are held for the foreigners of the neighborhood. Classes in music, English, gymnastics, carpentry and the like are maintained under the instruction of a staff of trained supervisors. There are also neighborhood organizations that meet in the church house, among them the Mothers' Club, the Girls' Protective League, the Girls' Guild, The St Mark's Girls' Dramatic Club, the Girls' Athletic Association (by means of which East Side girls are given instruction in swimming, basketball and folk dancing), men's and boys' clubs devoted to several different purposes, mandolin clubs, and other musical organizations and a host of other associations.

Then there is the settlement work through which only certain nationalities are reached. A special effort is made to attract Italians through an Italian mission. In conjunction with this mission, dramatic organizations, music classes, English and Italian classes, and gymnasium classes are maintained.

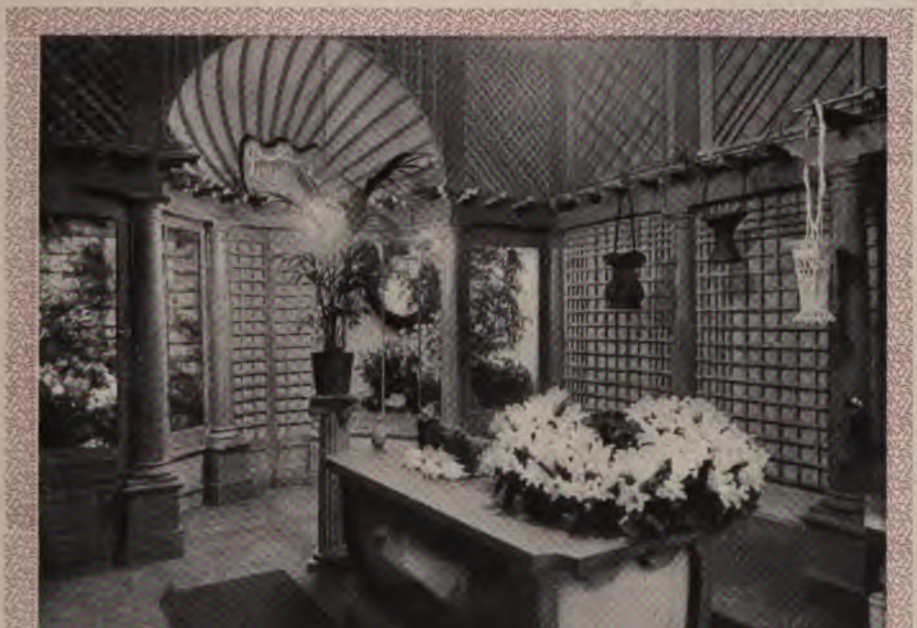
And of late an effort has been made to interest members of the huge Polish settlement that has sprung up in the neighborhood of the chapel. It is estimated that there are approximately 30,000 Polish people in the vicinity and work is now under way to organize clubs and associations in which these people will become interested and by means of which they ultimately will be benefited.

But most unusual of all is the work that is conducted at St Mark's itself. Here the spacious grounds are thrown open to the school children who, under the supervision of their teachers, wander through the churchyard to learn their history first hand. Many forms of educational work are carried on here too, one of especial interest being the University Extension Course which is conducted during the Winter.

The Standard Arcade

THE idea of many distinct shops under one roof, though old enough and common both to the Continent and the East, is making its first downtown appearance in the Standard Arcade. While recalling in some respects arcades of the older order, this novelty at 50 Broadway suggests more the big Italian enclosures known as *gallerias*. The florid ornateness of the "Umberto" at Naples and the memorable fountain of the smaller "Vittoria" of Cook tourist celebrity both are wanting; yet the shops themselves revert to type, and one at least, a characteristic Repetti, presents both name and realism.

The lighting expert and the decorator have joined forces to produce here a series of stores surpassing in attraction many an uptown department establishment. The Repetti Shop, just spoken of, the work of Hiram P Frear, comprises ground floor and mezzanine. Of the Adam style, the decorating has been done in French gray with panels of dark blue, the fluted ovals and other Adam features being accented in the blue. These motifs appear not only in a narrow frieze about the main room, but are



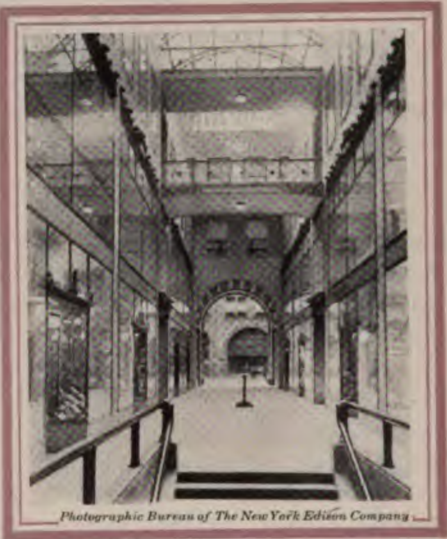
Photographic Bureau of The New York Edison Company

The Gilbank Shop, Framed in Basswood Trelliswork, is Lighted both by Hanging Lamps and Concealed Bulbs beneath the Lintels of the Trellis

lined across the counters and suggested on pilasters and window settings. An engaging tea-room occupies the mezzanine, reached at the rear by spiral steps. The prevailing decoration in figure and color is also carried out in lighting globes that hang at artistic intervals in the shop and above stairs.

No less effective is a neighboring Gilbank store, as inviting in its way as the flowers it offers. The decorative scheme employs basswood trelliswork framing the room in pergolas, under the lintels of which incandescent bulbs have been set. A broad niche of similar work and lighted by concealed lamps opens at the back of the shop. Concealed lighting has also been used in the show windows. Hanging globes of appropriate form furnish what general lighting is required.

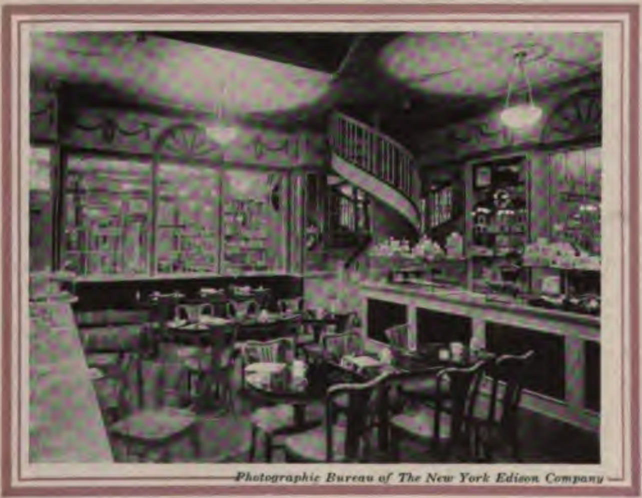
While reflector counter lighting is used in other instances in the Arcade, it has been adopted in large quantity by one of the well-known Kaiser shops. Not only is the main floor taken up by characteristic displays in the Kaiser line, but a staircase leads to a capacious mezzanine where again appear brightly lighted counters filled with attractive apparel.


Photographic Bureau of The New York Edison Company

The Arcade, Looking from the New Street Strairway. Hanging Roof Lamps of High Wattage Afford a Brilliant Illumination

To speak in detail of the United Cigar and Carrol Fruit stores, the Art Shop, and the Chas W Wolf Company's extensive arrays of travelers' requisites would prove but repetition. A fully stocked typewriter exchange and the beauty shop of one Mme Spevak must also rest content in the mention.

On a lower level opening on New Street considerable


Photographic Bureau of The New York Edison Company

Decorated in Adam, the Repetti Shop Displays Lighting Bowls of the Period, Tinted in the Prevailing Colors

space is occupied by the Globe Wernicke Company, the use of combination bowl and reflector lighting bringing out the handsomely finished surfaces of desks and cabinets. At the rear a surprise of some magnitude is revealed in a brand-new Automat of the customary aspect. Across from Globe Wernicke stands the admirably equipped clothing store of J and S Holstein, flanked by six large reflector-lighted show windows, one on New Street and five facing the big lobby.

Both here and on the Broadway level each shop entrance is lighted by a distinctive lantern of ground glass related in design to great lamps suspended from the Doric panels of the Arcade ceiling. Offices comprise the third and fourth stories on Broadway and are reached by an electric elevator.

Photographic Bureau of The New York Edison Company

Like the Italian Gallerias, the new Arcade Suggests from the Street but Little of the Attractiveness Within

Play Ball

WHEREVER the crisp command, "Play ball!" is heard there is sure to be an eager and enthusiastic crowd. Realizing the magnetism of the game, a firm of amusement builders have established a one-man, automatic baseball contest in which the player bats and scores, while electricity, operating an ingenious mechanism, acts as pitcher.

The game is set up in an enclosed court. At one end is a bank of nets each of which is labeled to indicate the hit scored by the batter. Before this cage is the pitching machine, which is operated by two Westinghouse motors. This throws a regulation baseball across the home plate, producing curves, drops, a fast one or the fade-away. The player stands at the other end of the cage with a regulation bat and, at the crisp command, "Play ball!" from the operator the balls are served.

Balls and strikes are called on the batter, and of course all his hits are scored. The length of a drive depends upon the net into which he sends the sphere. One net is labeled "single," another "two-base hit," the "home run" net being at the top of the bank and more difficult to reach than any of the rest. In fact, this apparatus makes it possible to play the game all through the year.

The X-Ray in Industry

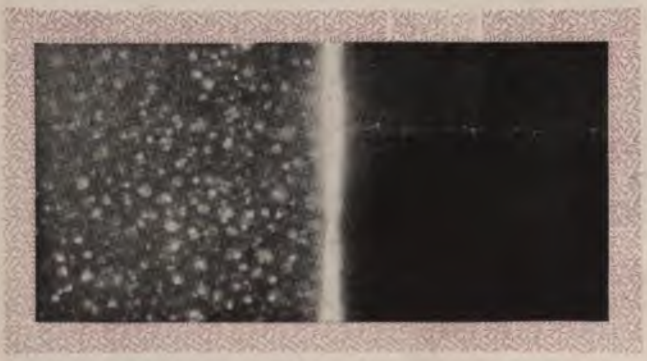
THE Roentgen rays during the past several months have been put to many uses—some of them unusual and most of them startling in the light of the marked limitations of the application of rays only a few years ago.

Discovered quite by accident, the rays, since designated in honor of Wilhelm Roentgen, their discoverer, soon found a wide scientific application. Then with the knowledge that they could penetrate opaque material it was but natural that they should find favor with the medical profession for the examination of bones. Later, through improved technic and apparatus, they were used for diagnosing organic conditions and for the treatment of various diseases.

Now, in addition to their medical value the rays have reached a place of great importance in the commercial and industrial field. Nor has their power been overlooked by the scientific detective.

During the past months there have been many cases of thwarted attempts at smuggling wherein the rays have played a prominent part in locating contraband material. One expedient resorted to in shipping rubber across the Atlantic was to pack it in bales of cotton waste. So carefully were the bales made up that to all appearances they were nothing other than they appeared to be. The scheme seemed destined for success until certain bales were selected for X-ray examination. Under the penetrating ray a faint shadow was cast on the fluoroscope. The bales were opened, and packed in every 350 pounds of cotton waste were found 250 pounds of rubber. In another instance the X-ray examination of the personal baggage of a traveler disclosed the presence of mine cases and asphyxiating bombs.

Of a more constructive purpose, however, is the use of the rays industrially in the examination of substances required in the various fields of manufacture. Flaws have been found in steel castings, porousness has been revealed in copper, defects in insulating material have been located, while in the manufacture of cigars the rays are used to kill the destructive tobacco beetle.



Difference in Internal Structure of Unboronized and Boronized Copper

Recently a steel casting was received at the works of the

Flaw in Steel Casting as Revealed by the X-Rays

General Electric Company at Schenectady. It was two and one-half inches thick and weighed about one ton. During the process of machining down to the desired thickness slight imperfections were disclosed. It was then decided to make an X-ray examination of the entire casting. The steel was set on edge, backed by a sheet of lead with a photographic plate between. A Coolidge tube designed especially to carry high voltages was used. Current at 1.25 milliamperes was passed through the tube for each of several two-minute exposures. The resulting pictures located a long flaw. To confirm the X-ray finding a disc was cut from the metal at a point indicated on the photograph, and the hole was found just as indicated.

In another test, copper castings were examined. Ordinarily copper castings are full of pores and blow-holes which not only reduce the mechanical value of the metal but result in very low electrical conductivity. This of course is due to the oxidization of the metal. Boron suboxide, a by-product of the manufacture of boron, has the property of deoxidizing copper without combining with it and is now generally used at all copper plants. In the test boronized copper and unboronized copper were examined side by side, the X-ray photographs being recorded on the same plate. The pores in the unboronized metal showed clearly while the treated metal showed a solid structure. The photographs were afterwards confirmed by planing down the surfaces of the two castings.

Another striking illustration of the industrial value of X-rays is seen in the examination of built-up sheets of mica, which are used for insulation in electric motors and generators. Foreign substances or varying thicknesses make the material useless for

Varying Thicknesses of Built-up Mica

this purpose. The ordinary inspection consists of a visual examination and gauging with a micrometer, which at its best is a slow process. Under the X-rays all defects may be seen at a glance. The sheets are only .032 inches thick yet a variation of .005 is indicated plainly.

In embryology X-rays are used for the study of plant and animal life at various stages of development.

What is probably one of the largest commercial applications of the X-ray is at a tobacco factory in Key West. The tobacco beetle larva, which lives on the leaf, is so small that it cannot be seen. If it is not destroyed it develops, becomes active and eats its way through the finished cigar. At the factory in question the cigars are made and packed in boxes, no effort being made to destroy the larva until after the containers have been closed. Then the boxes of cigars are passed through the X-rays, the exposure destroying all life without affecting the tobacco.

The phenomena of the rays was discovered in 1895. A period of twenty years has seen their development from a mystery to a scientific agent of inestimable value. It is interesting to speculate on the development in Roentgenology that, in response to the demands of commerce and industry, will come with the next twenty years.

New Air-Craft Detector

A NEW method of detecting the presence of dirigibles before they announce themselves has been devised by Mr E F Chandler, prominent in harbor defence work. Mr Chandler urges the use of a number of microphones immediately about the station to be guarded. By this means an observer can listen and compare the sound of the airship's propellers as heard through the transmitters. Their height, speed and range thus discovered, a counter-attack can be initiated before the air craft reach a point from which their falling bombs would cause damage to the object of their attack.

This Flower Radiograph was made by Mr W H Dodge of Chicago, using Wappler Apparatus

Current Breezes

THE Fourth of July, 1885, is memorable in fan history. On that date appeared in the columns of *The Electrical Review* and *The Electrical World* the announcement that the "Iceberg" had at last been invented and might be had for a reasonable consideration from the firm of Stout, Meadowcroft and Company, authorized agents of the Edison Lamp Company and dealers in electrical supplies.

Now the "Iceberg," which heralded a peaceful revolution in matters pertaining to ventilation, was a little contrivance, about three and a half hands high, consisting of a small motor with attached vanes of brass mounted on a brass upright with metal base and harnessed by two wires to a compact three-cell battery. When the blades were in motion they created a breeze at the rate of about 2,100 cubic feet an hour, and at a velocity of 3.6 miles. In short, the "Iceberg" was an electric fan, pioneer of its kind, and the notice of its advent was a veritable declaration of independence, proclaiming the future emancipation of man from oppressive indoor atmospheric conditions. Likewise, it was an ultimatum issued to all insect life, which previously had waxed hardily within doors. Many of these fans were purchased for the Stock Exchange and leading banking houses of New York, and on September 12th it was stated that more than fifty were whirling merrily "in the downtown district alone."

The public also was curious, and as no type of life-saving apparatus has yet been invented which inquisitiveness has not proved capable of converting into an engine for self-destruction, the electric fan claimed its toll of human digits. In those days fans were unprovided with guards and, as the story goes, a Wall street broker, pushing his curiosity not wisely but too well, tried to stop the whirl of blades with his fingers. For a time thereafter a "hands off" sign decorated the thing of brass and mystery, warning others against a too hasty acceptance of the broker's theory.

One would think that an invention so productive of enjoyment should

Ornamental Standard and Guard Developed by the Crucet Manufacturing Company

have met eager welcome. But old and tried ways of being uncomfortable proved more acceptable than new and strange comforts. Thus the question, whether it is better to suffer the stings and venom of outrageous insects or be fanned by devices that we know not of, was answered in a manner adverse to fan interests. Until 1890, the year marking the development of fan motors for use with alternating current, the early prediction that "desks, parlors, bedrooms, etc, will soon be ornamented by this desirable invention," did not seem destined to be fulfilled.

The fans of the period were operated by small batteries and one-eighth horsepower motors, or "by the current which supplies the lamps at night, a fan and a lamp requiring the same amount of power," as the announcements stated. Frequently these fans were rented for the summer, the charge for the season being fifteen dollars.

Photographic Bureau of The New York Edison Company

Adams-Bagnall Gyrating Fan and Lighting Fixture for Soda Fountain Decoration

By 1890 the comfort to be obtained from the use of these appliances was so far understood that something like a demand for the new ventilating apparatus had been created. In that year a new combination electric motor and fan was devised, the motor, which dispensed with a rheostat, being belted directly to the fan. At about the same time there was advertised a new ceiling fan with improved oil cup mechanism, the fan, though constructed to be driven by any motive power, being especially adapted to the electric motor. Motor-driven bracket fans and sus-

Photographic Bureau of The New York Edison Company

Ceiling Fans Made by the General Electric Company for Churchill's Restaurant

Photographic Bureau of The New York Edison Company

Diehl Fans of the Bracket Type are Used in the Various Branches of the Exchange Buffet

pended fans were also in existence, and in 1892 there was placed upon the market a fan of eccentric but pleasing appearance, designed for suspension or bracket form.

But merely to be an electric fan, monotonously stirring air currents for the benefit of sweltering humanity, was not enough for this ambitious instrument. Its history, from the year 1892 onward, too voluminous for brief rehearsal, is of less interest than the varied applications of which the fan has in recent years proved itself capable. By entering into alliance with an atomizer, operated by a wise confectioner, it has propelled appetizing odors from store to sidewalk, thereby attracting custom. Belted to pulleys, it has kept in motion ribbon fly chasers, saving a fruiterer labor and expense for the cleaning of plate glass mirrors. Provided with a brass receptacle for wick and liquid disinfectants, its blast has distributed the germ-slaying fluid within hospitals, moving picture theatres and department stores.

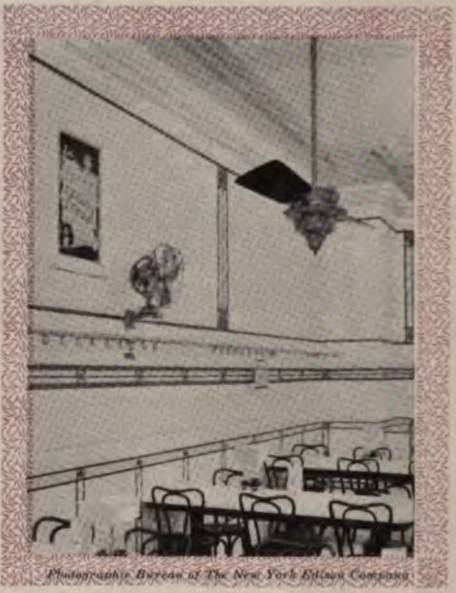
Nor should the solution which the electric fan gave for a certain shopkeepers' dilemma be forgotten. As every one knows, a screen door, like any other, must be open or shut. Now when it is open, flies enter, the fruit is spoiled and custom repelled, but when it is shut customers are not entering. Hence the difficulty. Something told the storekeeper that flies cannot abide the draft of an electric fan, so he boldly removed the screen and installed a ceiling fan in the doorway.

But while it is true that a fan which is to the manner born, like an electric fan, will adapt itself gracefully to all situations, its primary office is to move the air, not flies or perfume, or the gratitude of perplexed merchants. And how it should move the air is a question of importance which has called for numerous fan tests within

Westinghouse Gyro Fan, for Dining Car Service

recent years. One of these was about eight years ago in the electrical laboratory of the University of Texas, various makes of fan being submitted for competition, subject to certain conditions. The tests indicated, among other things, that the shape of the blades had much to do with the volume of air delivered.

More recently it has been pointed out that neither the air velocity nor the volume of air delivered by a given type of fan is a true measure of its practical efficiency or satisfactoriness under all conditions. For a fan, which must not only move the air but project it in desired directions, has, with regard to speed, a critical point beyond which further increase results in useless and wasteful "churning." Some fans, designed for specific purposes, move large quantities of air within a limited area, while fans of other construction project small jets of air a much greater distance.


Photographic Bureau of The New York Edison Company

Ceiling and Oscillating Fans add to the Comfort of Childs' Restaurants

Earlier fans were unprovided with a means of directing the air currents, but about fifteen years ago a fan was invented which would throw a blast in any desired direction. This was another step forward, before the appearance of the oscillating and rotating fans, which have added so much to office comfort. Still another development is the blower fan which, in addition to its hot weather duties, provides blasts of warm air in the winter. Directed against a steam radiator, air from this blower effects a more efficient heating of large rooms.

The rapid growth of the fan industry in recent years is indicated by the fact that as recently as January, 1915, there were in New York only twenty-three dealers in the various makes of fans, while the latest list contains no less than thirty-two names.

This Sturtevant Blower Delivers either Hot or Cold Air in Great Volume

Equipment Maintenance

SERVICE is the keynote of the twentieth century. The company, association, or individual which renders the greatest service to its neighbors, its customers, or its community is the one which reaps the biggest harvest of respect and material reward. This age and generation is also a period of specialization. The jack-of-all-trades is an object, if not exactly of scorn, then of pity. The man who can do one thing well is the one whose services are constantly in demand. When the two, service and specialization, are combined, the result is a human being or an organization of surpassing excellence.

There are some twenty-one companies in New York which specialize in what might be called electrical maintenance service, and to these twenty-one (eleven there were five years ago) has come a full measure of recognition.

The particular form of service which they render might be more aptly described as electric motor health insurance, for it is their business to supervise operation of motors and to provide against a possible disablement of the equipment. The central station brings electric current to the door in uninterrupted flow,—the service companies keep the electric equipment of their clients in condition for uninterrupted operation.

Before the advent of the electric service company an accident would result in either one of two things, a costly hold-up of operations or a period of feverish activity, during which the owner would summon half a dozen different electrical repair men, who by their efforts would put the motor back in service. But such an arrangement, while it accomplished the repair, was like locking the stable door after the horse had been stolen, for it could not bring back the time and effort that had been lost. What was needed was a regular inspection service to supervise the condition of the equipment and to forestall trouble. And this is the task to which the electric service companies have set themselves.

The Work of the Service Companies

In the early days of the industry, before electrical machinery had reached its present state of perfection, it might seem that this need was more urgent, but while motors were not then as reliable, their use was not nearly so widespread as now. Today, however, five hundred motors in one factory is not an unusual equipment, and those factories, printing houses, hospitals, hotels and the like which boast over a hundred are too numerous to mention.

Of course it stands to reason that at some time or other repairs are necessary. Were they the regular thing and the size of the motor equipment warranted it, the logical thing to do would be to employ a trained electrician as a part of the routine staff. But electric motors are not prone to indisposition, and to employ a man simply and solely to handle an occasional emergency would not be profitable. Here then is another reason for the existence of the electric service companies and their industrial "minute-men."

Photographic Bureau of The New York Edison Company

Shops of this Character are maintained by all the Electric Service Companies. Their Function is to Provide Prompt Repair or Replacement in the Event of any Electrical Mishap

These companies are provided with shops which specialize in the repair of electric motors and other pieces of electrical apparatus. They are also equipped with a reserve complement of motors, any one of which can be sent out to take the place of a disabled unit. Of course, much of the repair work is done on the premises of the client, and for this outside work inspectors, wiremen, cablemen, and specialists of various kinds are required.

Among the companies which serve in this capacity are to be mentioned the Blackall and Baldwin Company, the A L Bogart Company, the Charles A Borne Company, the Conlan Electric Company, the Electric Machine and Tool Company, the Electric Motor Inspection and Repair Company, the Electrical Repair Company, the General Electric Inspection Company, the Globe Electric Inspection and Repair Company, the Graham Brothers Company, Jordan Brothers, Inc, the Kelting Electric Company, the Maintenance Company, the Naumer Electric Company, Naylor and Newton, the Reilly Maintenance Corporation, C Van Dyck See, the

George Weiderman Electric Company, and the repair shop of the Westinghouse Electric and Manufacturing Company.

As has already been stated, a large part of the work of the electrical service companies is devoted to the care and maintenance of elevator equipment in buildings served with central station current. This sort of service appeals particularly to apartment house owners and there are many such buildings on the books of the service companies. In such cases the service company enters into a contract with the owners to maintain the motors in actual service twenty-four hours a day and three hundred and sixty-five days in a year. The chances are that very little repairing is needed, but the contract acts as a trouble preventer. The equipment is closely inspected at regular intervals and replacements of wearing parts are made from time to time, as deemed necessary. In the event of a serious breakdown of any kind a new motor or a new part is shipped out of the repair shop immediately and put in place while the disabled unit is being doctored. This particular form of service is made possible by emergency crews, which are always ready to leave the shops at a moment's notice.

Another large group of customers of the service companies is composed of manufacturers of various sorts. An instance of this sort of maintenance is to be found in the work done for the Shultz's Bread Company in New York City. This company operates fourteen branch bakeries, each provided with a complete electrical equipment. In all about 215 motors are used and it is the service company's duty to maintain these at full efficiency. Another instance of this sort of service is to be found in the Knickerbocker Chocolate Company's factory, and still another in the plant of the Globe Electrotype Company. The first of these is equipped with fifty-eight motors and the second with thirty-eight. The particular electrical service company which has them in charge maintains a constant supervision of their operation and keeps them in continual repair.

These are but a few instances of the service which these companies render. There are thousands of other establishments throughout the greater city and no electrical installation is too small or none too big to fail to profit by the expert care and attention which the service companies are prepared to give.

Modern Bo-Peep

Little Bo-Peep
She lost her sheep
And couldn't tell where to find them.
She 'phoned to each farm
And gave this alarm:
"Lost sheep, with their tails behind them."

She then got her car
And searched near and far,
With a motor horn resounding.
The sheep heard the noise
And like fluffy toys
Towards her they came a-bounding.

'Twas the use of the power
For a short little hour
That enabled Bo-Peep to find them,
And in safety too,
For it really is true
They still had their tails behind them.

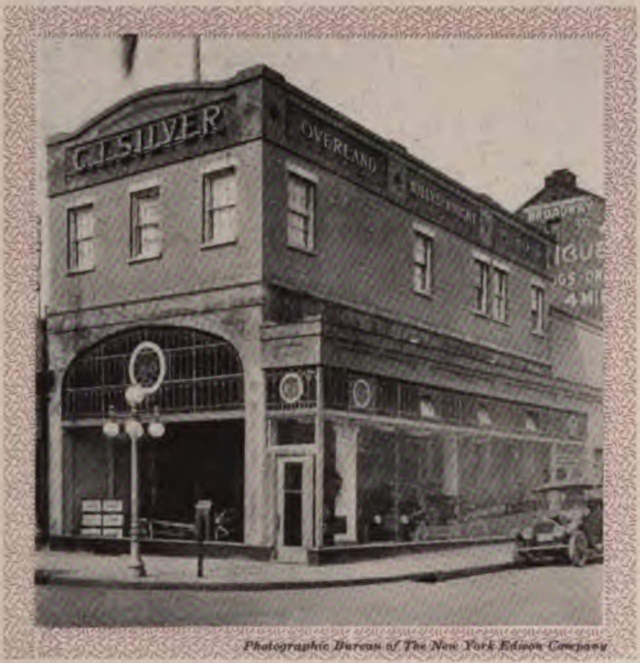
T M Bray

"Silver Service" at Manor House Square

WHILE the palatial automobile showroom has become matter of fact in New York City, the concerns interested have in most cases hesitated to extend the idea to the towns of the vicinity. An exception is found in the C T Silver Motor Company. The Columbus Circle showrooms of these distributors have for some time been prominent among the ornate display places of the industry. An innovation of no small importance is observed in a newly opened Silver showroom at Manor House Square, in Yonkers.

The design chosen is late Gothic, brought out not only in pillars running the length of the room but in finely worked pilasters and an arched ceiling set off by ribs and rosettes of the period. At the moment, the wall surface of smooth and expensively laid plaster is plain ivory in tone. The ceiling has been done in an agreeable old blue. Presently, however, frescoes portraying the evolution of the vehicle, from the ox-cart to the automobile, will appear in the lunettes formed by side and end walls and ceiling arches. Corresponding space on the two street sides has been filled by well selected stained windows. With marble trimmings and a mosaic floor of neutral tone the room becomes a fit setting for the exceedingly handsome cars it contains. The Gothic idea is further emphasized by chairs and a table or two of antique oak.

Lighting is accomplished by a liberal installation of small units. These are first noted in the



Photographic Bureau of The New York Edison Company

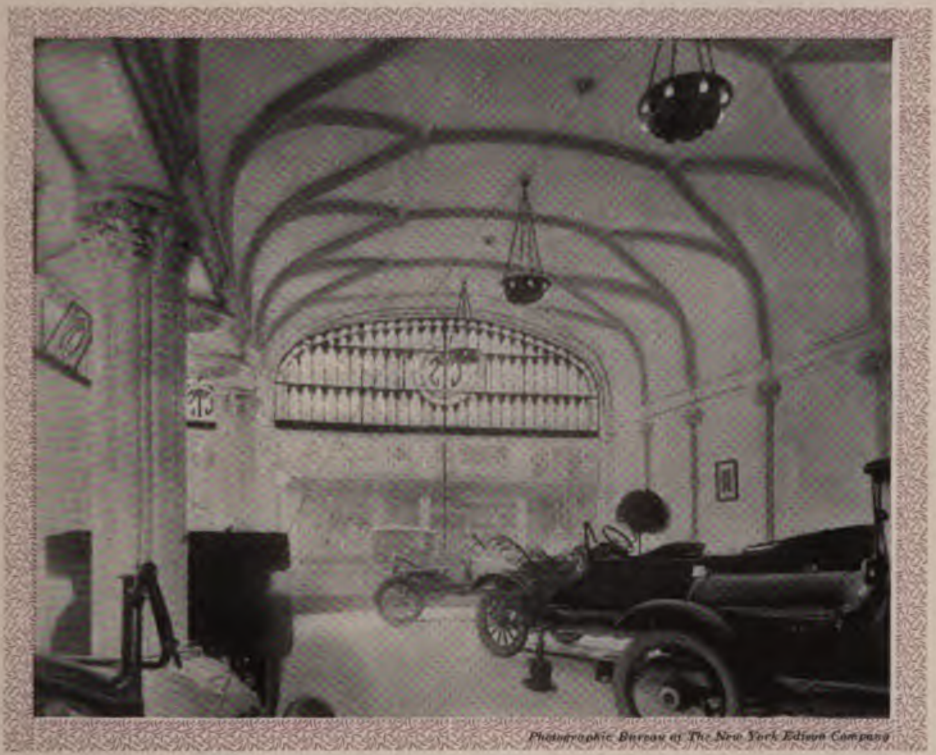
Seen from Down the Street, the Showroom, Especially at Night, becomes one of the Compelling Attractions of the Neighborhood

form of ground bulbs about the rim of graceful hanging fixtures of brass. A row of 20-watt lamps runs along the base of the window lunettes, lighting them in strong emphasis. Enclosed bulbs of similar wattage hang at intervals midway between these and the ceiling. With such lighting the showroom easily stands out as one of the conspicuous displays of the locality.

Above stairs, considerable space is taken up in the storage of repair parts. The remainder of the loft is occupied by a fully equipped repair shop using four electric motors.

The opening of this Yonkers branch of the Silver interests is in line with the wide-awake policy of the company. On the night in question an informal reception took place and the building was thrown open to the inspection of visitors. A musical program was provided while a buffet luncheon was served in the loft over the showrooms.

By means of the new branch, which soon will be supplemented by an additional service station in another part of the town, local buyers of the cars handled by C T Silver are assured of the self-same service afforded at metropolitan headquarters. Similar branches have been established in the Bronx, in Brooklyn, and in Newark, New Jersey.



Photographic Bureau of The New York Edison Company

Modeled on Gothic Principles, this new Silver Showroom is a Fit Setting for the Exceedingly Handsome Cars it Exhibits

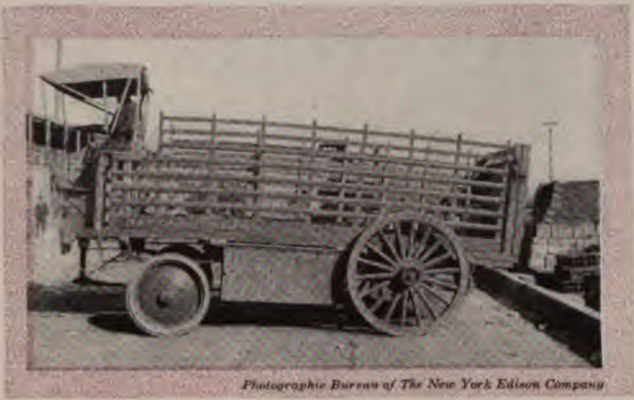
Truck Transformation

THERE are approximately ten thousand electric trucks and wagons in service in the United States today operating either as complete or partial equipment for the delivery system in one hundred and twenty-four lines of trade. Half of this number, or five thousand, are used for hauling extremely heavy loads or for what might be called freight-vehicle work. In hauling of this character the prime requirements of a motor vehicle are reliability and economy of operation, neither an extremely wide radius nor a high degree of speed being demanded. That the electric truck is especially fitted for this sort of work is amply demonstrated by the satisfactory experience of such users.

An instance of the effectiveness of the electric truck in this particular field is to be found in the equipment of the National Fire Proofing Company, contractors and manufacturers of fireproof hollow tiling. The company's New York territory up to three years ago had depended upon horse-drawn trucks for all delivery requirements. Then the question of motorizing the vehicles was taken up and after considerable time spent in an exhaustive canvass of the motor truck field, the electric was decided upon as the logical type. This for the reason that the work would not

Photographic Bureau of The New York Edison Company

Three of the National Fire Proofing Company's Electric Trucks being Loaded on One of the East River Docks


Photographic Bureau of The New York Edison Company

Motor Wheels, Controlling Apparatus and a Battery, Transform Horse Trucks into Efficient Motor Vehicles

be beyond the city limits, and also that the trucks would be called upon to haul heavy dead weight loads through the press and jam of crowded streets. Further, the fireproof tiling which the company manufactures is shipped to New York from a Boston factory and landed on the East River docks. As has been the case with other concerns, so it was with the National Fire Proofing Company, electrics were found to be easier to handle around the docks than gasoline cars of the same capacity.

Three years ago the first trucks of the present equipment were put into commission. These two were later increased to five, and these again, within the past few months have been augmented by two more, bringing the total operated by this company in New York City to seven.

The type of truck used—a conversion from horse-drawn wagons—is of interest and gives rise to the heading of this article, "Truck Transformation." At the time the change from horses to electrics was decided upon, the company was well supplied with horse vehicles which it seemed inadvisable to part with, not only because of the money sacrifice involved but because they had proved, in actual service, to be of a design best adapted to the particular business in hand. As a consequence it was decided to conserve the wagon bodies and equip them with motor-contained wheels. These wheels, manufactured by the Couple-Gear Freight Wheel Company, include as an integral part of their mechanism both an electric motor and driving gears. This construction not only results in a front wheel drive but also permits of transforming ordinary horse-drawn vehicles into electrics by the simple addition of the motor wheels, the batteries and the necessary control apparatus.

The advantages of this type of construction, as applied to the needs of hauling fire brick, are that it permits of standard wagon design with high rear wheels which pull more easily, ride more easily, cut less into soft ground and bad spots in city pavement, and rise more easily over obstructions. Another important consideration is the fact that the bulk of the heavy load is carried on the steel tires of the rear wheels, resulting in a considerable saving in the purchase of new rubber tires.

That the work of these trucks for the National Fire Proofing Company is of the most satisfactory character is amply testified to by the frequent additions to the fleet.

A Company School in Garment Making

TIME was when mention of ready-made clothes suggested sweatshops of the lower East Side. Ready-to-wear garments were associated with cheap workmanship in a cheap district of the city and in cheap quarters. And this, for the most part, was true. In a comparatively small section of the city, located east of the Bowery and south of Fourteenth Street, the garment trade had its beginning. Here in crowded tenements "piece workers" made the first ready-to-wear garments under the old fashioned "family system."

Photographic Bureau of The New York Edison Company

The Apprentice Class Receiving Instructions in Blouse Making from an Expert Operator

The tenements given over to the garment trade were unsanitary, ill-ventilated and poorly lighted. The machines were driven by footpower and pressing was done by women and girls provided with hand irons. Under what has been characterized as the "family system," clothes to be made were sent to these various tenements by contracting manufacturers. Here the pieces were stitched together by father and mother and sons and daughters, some of the children so young that they could scarcely handle a needle.

But in the last few decades much of this has changed. Ready-to-wear garments no longer suggest sweatshops for, in truth, the sweatshop is passing out entirely. Clothing factories where electricity instead of human strength does the drudgery, where skilled fingers only are permitted to work, and where light is abundant and ventilation is scientifically arranged have taken the place of the tenement workroom.

By way of contrast, picture a present day enterprise, the shirtwaist factory of Webster and Aaron, in East Thirty-third Street. Here in a modern loft building, with marbled and decorated entrance halls, swift elevators, an elaborate system of fire protection, and a host of other advantages, are housed not only the factory but the offices and reception rooms.

The factory proper is a huge, high-ceilinged room, well ventilated and lighted. A filtration plant is operated to purify the drinking water for the employees, first aid cabinets are kept ready for instant use, a rest room is maintained for the young women, a lunch room with kitchenette equipped with electric cooking appliances is at the disposal of the factory force and most interesting of all, an apprentice class is maintained in which girls just out of school are taught to become expert needleworkers. And they are paid while receiving these lessons.

Photographic Bureau of The New York Edison Company

Electric Irons are Used in the Modern Garment Factory

This beginners' class is composed of girls of all ages, creeds and nationalities to the number of about twenty-five. They come direct from the city's public schools or from the immigrant station at Ellis Island.

Association with other student garment-workers not only trains these foreign girls in needlework but assists them in learning the language of the country as well. There is on record the case of a girl of Italian parentage who entered this company's employ direct from Ellis Island. She did not know a word of English and, although she was an expert needleworker in her own country, she did not know the use of electrically driven machines and the various other modern appliances now characteristic of the garment-making industry in New York. This girl started at the usual learner's salary of six dollars a week. Inside of six months she was given regular employment at one of the machines and was earning from sixteen to eighteen dollars a week. Moreover, she was speaking very good English by that time, and it is said that six months later, through the influence of the city's evening schools which she attended, she was reading Ruskin and Shakespeare with keen appreciation.

Reading of good literature is by no means unusual, however, for the management of the establishment makes an effort to cultivate a taste for good reading among the girls of the factory. In the matter of earnings, this girl was not an exception either. The student garment-makers start at six dollars a week and their first work is pulling threads or basting finished blouses, and incidentally learning the construction of a waist. The next apprentice task is cutting the silk from behind lace insertion. After this the salary is increased and they are put to making buttonholes on an electric buttonholing machine. At this stage they also assist in the finishing work, cutting, sewing and trimming.

The next step is the operating department where learners are started at electric sewing machines and are given piece work to do. From this point on the girl's income depends entirely upon her own capabilities. She cannot make under fourteen dollars a week, however, for the manufacturers estimate that each machine must be worth at least that much to the operator or the factory is not working up to capacity.

But almost never does an operator fall below fourteen dollars a week. She can with ease make from sixteen to eighteen dollars during six working days, and the majority of girls earn more than twenty dollars. Indeed some have been known to increase their earnings to thirty-two to thirty-six dollars during rush periods.

There are in all 170 machines in the Webster and Aaron factory, and all are operated by electricity. Besides this there is a veritable squadron of electric irons, several buttonhole-making machines and an electric pressing machine. Current for all this equipment is supplied from the mains of The New York Edison Company.

And in keeping this exceptionally complete equipment in operation more than two hundred and fifty girls find places on the company's payroll. While these workers are of a dozen different nationalities Italians are in the majority, for the young women from Italy seem to be the most skilled workers who come to this country.

Photographic Bureau of The New York Edison Company

Scores upon Scores of Motor-Driven Sewing Machines now do the Work in the Up-to-Date Apparel Manufacturing Establishments

Carborundum Stone Cutting

GRIT and iron saws, time-honored apparatus of Carrara quarrymen, have gone forever out of the lives of the stone workers of Manhattan, and in their place is found a simple disc of carborundum and an electric motor. And by this substitution time, money, and best of all, expensive marbles are being saved. Carborundum was first introduced in marble work in the quarries of central Vermont a few years ago. Of course, like all other innovations, it was received with disfavor among the quarrymen. But it was not long before it had literally "cut out" the grit and iron saws and other old-time methods.

Later carborundum was brought into the granite industry. As in the marble quarries, the granite men were firm in the belief that the new method would be an absolute failure, for, they pointed out, "granite is so hard that it turns the edge of the best tempered steel." But a carborundum lathe was constructed, and behold, it turned out a stone column in a quarter the time of the former lathes; furthermore, the cuts were cleaner and the work more accurate and far less expensive.

Not long after the new abrasive was introduced in Vermont it was tried by stone workers in New York. These men were quick to see the value of its use and as a result the biggest stone-finishing yards in the city and vicinity are now equipped with carborundum machinery.

And now the stone workers have gone a step ahead. They have invented a portable carborundum cutting machine that can be taken into a building in course of construction. There, with the assistance of temporary service from the central station, they do all their marble cutting and trimming on the premises, and in half the time required formerly. Also the expense of erecting the marble is considerably decreased.

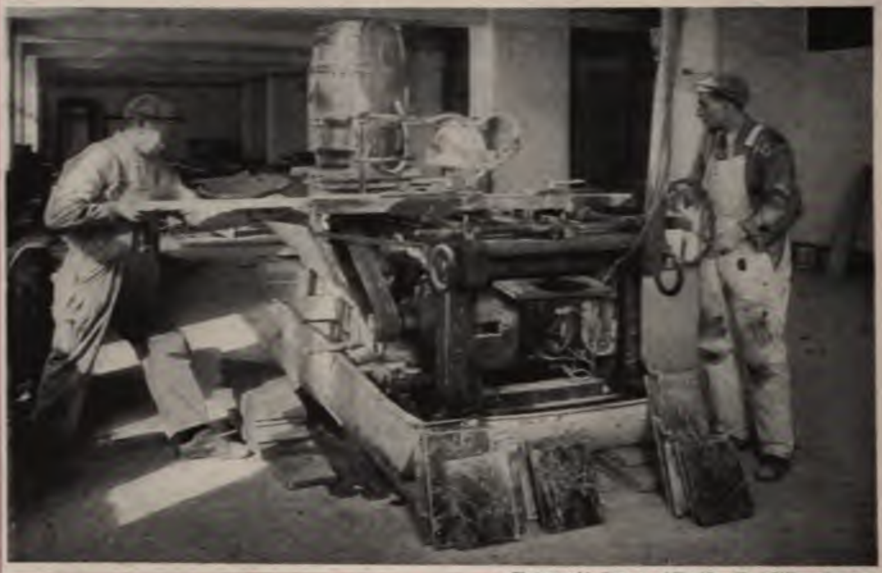
At Work in New York

At present the particular portable carborundum cutting machine in question is being operated by the Batterson-Eisele Company in the new Western Union Building by means of Edison Service. Mr Miller, who is in charge of all the marble construction work in this skyscraper, and who, by the way, was the first to suggest the use of a portable carborundum machine for this kind of work, states that the time and trouble saved by the new method is remarkable.

Formerly the workmen who installed marble copings and interior trimming in a structure of this size brought their polished marble from the stone yard to the building. They started by cementing sections of flat work and when they encountered bays, columns or piers around which the marble must be fitted, they took measurements, marked their stone in the right proportions and sent it back to the stone yard to be sawed and fitted.

Now the carborundum machine is brought along with the polished marble. The workmen proceed as usual with their task of installing copings, side walls and other trim, but whenever they require a section of marble especially cut they merely carry the piece in question to the carborundum machine and in no time at all the cut is made and the masons can proceed.

The machine has been found to be particularly valuable in work such as that now being done on the Western Union Building. A great deal of foreign marble is being used and of course this stone is extremely valuable. The fact that the carborundum machines cut marble with less waste than the former method of sawing means a great saving. Two kinds of European marble and one distinctly American stone are being used to decorate the interior of the building. The buff slabs that will be seen in the lobby of the new skyscraper are from a French marble known as Portocina while the black and green trimming in the various rooms is Pinis, from quarries in the Alps. The American stone is a rich white known as Alabama White, a particularly good quality of stone that has an exceptional color. Indeed it is said to rival Carrara in whiteness.



—Photographic Bureau of The New York Edison Company

The Batterson-Eisele Carborundum Marble-Cutting Machine at Work in the Western Union Building

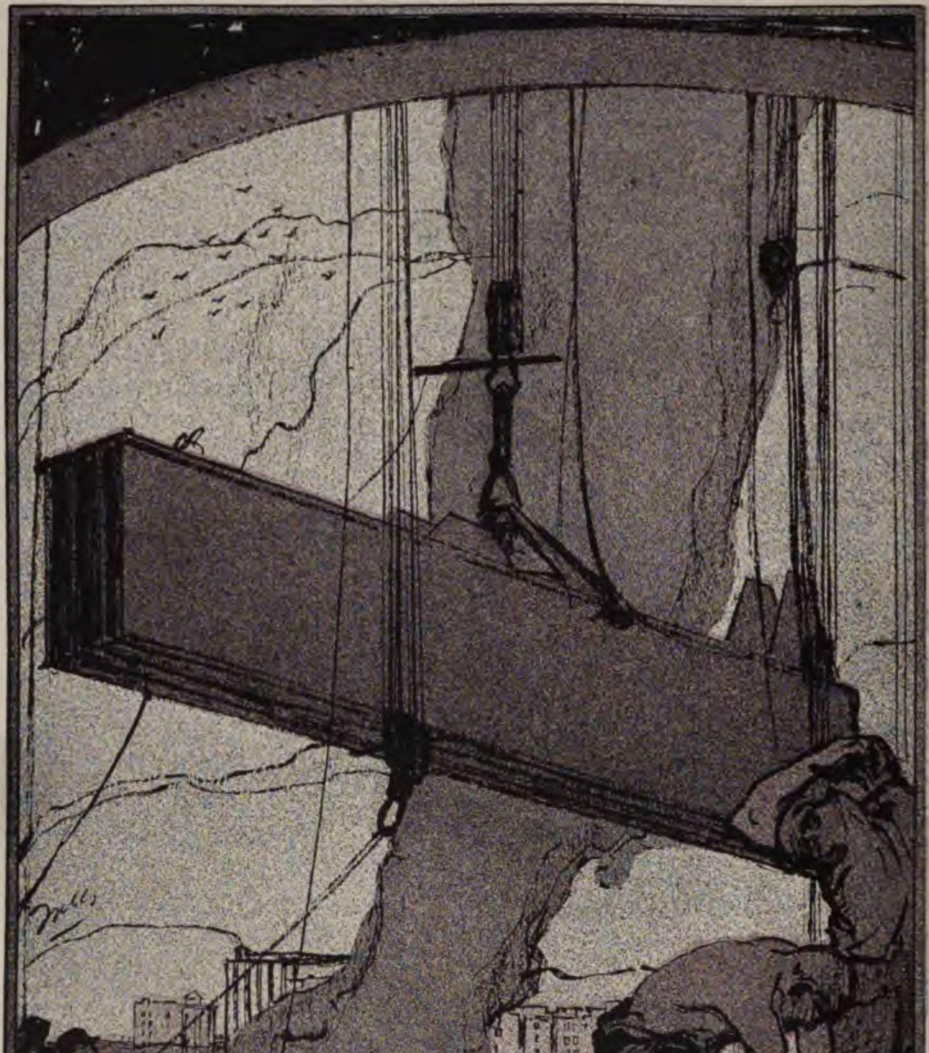
It is interesting to know, in connection with the stone work, that the long, fluted columns of granite that grace the Broadway and Fulton Street fronts were the first to be turned out by means of carborundum. These tall shafts of granite were cut on the first carborundum stone lathe to be installed in the quarries at Bethel, Vermont. They were, moreover, the first to be fluted by means of carborundum discs.

A "Fluting" Machine in use in the Bethel, Vermont, Granite Quarries

The former method of fluting granite columns was to put a number of stonecutters to work on a partly shaped shaft. These men would peck away at the stone hour after hour, day after day, cutting each groove. And as they worked they breathed the flintlike particles of hard stone, filling their lungs with a grit that sooner or later produced stonecutter's consumption. The adoption of carborundum in the cutting shed at the quarries has done a great deal to eliminate the unsafe conditions under which granite workers labored. The men are no longer forced to bend over the stones while finishing, and what little dust the whirring carborundum wheels are responsible for is immediately laid by dashes of water applied to the stone to keep the disc from becoming overheated.

Fluting columns now is only a matter of a few hours' work at the most. The shaft of stone is carried on the bed of a machine equipped with four carborundum discs. These discs cut grooves along the column at proper intervals. It only remains then for the stonecutters to chip away the small pieces of stone between the grooves—an easy task compared with their former work—and the fluting is finished. Since the use of carborundum in the cutting sheds of Bethel and the decrease in the number of cases of the deadly "grit," the death rate has been reduced perceptibly.

The First Carborundum Granite Lathe, in Operation. The Column which the Big Machine is Shaping was later used in the Construction of the Western Union Building



The Builders

Chaos and night with the Gods affright
Behind Olympus' door:
Twelve Titans tall from Pluto's hall
The gates from Orchus tore!

Huge are the hands laid on the lands—
The peak of Pelion nigh
Piled on the heap of Ossa's steep
To reach Olympus high!

* * *

Gone are the Gods and great Jove nods,
But other Titans come
At Cyclops' call to rear the wall
In the busy city's hum.

Stone and steel in the derrick's reel
Hoist to their waiting place;
Riveters purr like locusts whir,
Binding each beam and brace.

Wire and spark from a distant arc
Take up the Titans' load,
Each rope and strand in sure command
Along the lofty road!

Dreams of old days in ancient lays
To modern deeds must bow;
Service and *watt* straight to the spot
The tireless Titans now!

—*Don C Seitz*

Decoration by C B Falls

Manufacturers and Agents (Continued)

Horse Clippers

Gillette Clipping Machine Co—129-31 W 31st St

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Motors

General Uses

Allis Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Co Ercole—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—131 Liberty St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St

Used Motors

Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—261 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Mad Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building, Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Marelli & Co Ercole—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St

Refrigeration

Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Mad Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Elec Carriage Call & Spec'ty Co—311 W 40th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—1790 Broadway
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
Multi Power Signs—183 W Houston St
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Snow & Co—440 West 46th St
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St

Sign Flashers

Betts & Betts—256 West 55th St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Manufacturers and Agents (Concluded)

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—60 Cortlandt St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—30 East 42d St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 B'way
Kirkman Eng Corporation—173 Lafayette St
Mercantile Adv Co—Broadway & Herald Sq
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—22 E 41st St
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—30 E 42d St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Ave
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden)—119 W 42d St
Metropolitan Elec Products Co—17 E 38th St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—21 Park Row
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 42d St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The 1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James —119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—103 Park Ave
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden) 119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cadillac 46 E 41st St
Home Devices Corp (Modern)—Bush Term Bklyn
Hurley Machine Co—147-157 W 42nd St
Kandem Electric Co Inc—49 E 21st St
National Sewing Machine Co—290 Broadway
Sibley Pitman—19-21 W 36th St
Wemlinger Co Inc The—11 Broadway
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Construction Company
Broadway 1170—Alliance Electric Co Inc
Broadway 1328—New York Construction Co
Broadway 1402—Gagen & Butler
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Christopher St 41—W Buch
Church St 9—Johnson Construction Co
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 444—Russell & Co
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 39—Elec Construction & Sup Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Fifth Ave 65—L A Whitney Electric Co
Fifth Ave 75 —H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 227—Edward B Stott & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 207—F A Frey
Greenwich St 255—Frederick C Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 126—S Arthur Brown & Co
Ninth Ave 365—Geo E Valley & Bro
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2290—Nathan Zolinsky
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Electric Company
West Broadway 578—M & S Electric Co
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Electric Contracting Company
West 17th St 156—Harry A Hanft
West 23d St 71—Geo D Beinert Inc
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Elec Construction Co
West 31st St 109—Jandous Electric Equipment Company Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—New York Electric Installation Company
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 39th St 54—Charles T Henry
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 314—A & A Electric Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Manufacturing Company

Electrical Requirements for Wood-Working Machinery

Service	Required H P
6-in stitchers or molding machines	3 to 5
8-in stitchers or molding machines	7.5 to 10
Single surface planer	3.5 to 7.5
Double surface planer	7.5 to 15
Tenoners, double end	7.5 to 15
Tenoners, single end	2 to 15
8-in crosscut saw	1
12-in crosscut saw	3
20-in crosscut saw	7.5
30-in crosscut saw	15
8-in rip saw	1
15-in rip saw	5
30-in rip saw	20
Small band saw	1
Medium band saw, 1-in saw	2
Band saw, 2-in saw	5
Shingle machine	10
Shingle saw	1
Wood carver	2
Tenoning and mortising machines	3
Saw grinder	1
Saw set	1
Wood lathe	1 to 5
Wood boring machine	1
1.75-in double spindle shaper	7.5
9-in sticker	7.5
8-in buzz planer and joiner	1 to 1.5
12-in buzz planer and joiner	1.5 to 2
Wood Carving	
16-in buzz planer and joiner	2 to 3
24-in buzz planer and joiner	3 to 4

Service	Required H P
30-in buzz planer and joiner	4 to 5
Planer and matcher	6 to 10
Double and single surface planers	7.5 to 15
24-in planer	15
36-in planer	25
30-in one-drum sander	3
30-in two-drum sander	3.5
30-in three-drum sander	5
42-in one-drum sander	5
42-in two-drum sander	7.5
60-in three-drum sander	10
72-in three-drum sander	16
Box board matchers	2 to 3
Dado machines	1 to 2
Dove tailers	2 to 3
Dowel machines	0.5 to 0.75
Miter machines	1 to 2
Box nailer	0.75
Bit mortisers	1 to 2
Large box dove tailer	24
Small box dove tailer	10
Sash mortisers	1 to 2
Hollow chisel mortisers	2 to 3
Power mortisers	2 to 4
Inside molders	7.5 to 16
Outside molders	5 to 7.5
Panel raisers	1 to 3
Surface sanders	1 to 2
Horizontal edger	2
Box dresser	1
Large nailer	1.5

Manufacturers and Agents

Arc Lamps

Cooper Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Bklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Smith-Eldridge Co Agents) —39 Cortlandt St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Motors Truck Co—236 W 59th St (C)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey St Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Truck & Tractor Co—1834 Broadway (I)
Ohio Electric Car Co (Robt W Schuette Agent) —236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—1838 Broadway (C&P)
Waverley Co The (Poertner Motor Car Co Agents)—1759 Broadway (C & P)

Manufacturers and Agents (Continued)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Northwestern Electric Co The—1457–63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Bronxville N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Edison Thomas A Inc—141 Lakeside Avenue Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Mfg Co—165 B'way

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204–206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—527 W 23d St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42d St
Phila Storage Battery Co—American Building B'way and 58th St
Storage Battery Supply Co—239 East 27th St
United States Light & Heat Co—16–24 W 61st St
Willard Storage Bat Co The—228–30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303–305 Fifth Avenue
Hospital Supply Co The—53-55 5th Ave
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Av
Kny-Scheerer Co The—404–410 West 27th St
MacAlaster Wiggin Co—66 Bway Cambridg Mass
Meyrowitz Mfg Co—31st St and 1st Ave
Metropolitan Eng Co—30 E 42d St
Neel-Armstrong Co—2017 Fifth Ave
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 8t Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—5th Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St, 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 East 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252–258 West 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 Broadway
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 West Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62–64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417–421 Canal St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—1790 Broadway
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St
Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—1790 Broadway
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
H W Johns-Manville Co—Madison Ave & 41st St
Kandem Electric Co Inc—49 E 21st St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 Broadway

Globes—Reflectors

Dealing William—1 Hudson St.
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42nd St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Johns-Manville Co H W—Mad Ave & 41st St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn, N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—1790 Broadway
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialties Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St
Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Spring 9890
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
*124 W 42d St	Bryant 5262
*151 East 86th St	Lenox 7780
*27 East 125th St	Harlem 4020
*362 East 149th St	Melrose 9900

*Open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts west of the Bowery and south of Catherine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street east of and including the Bowery, and north of and including Catherine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

Tenth Street and Avenue D

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The Edison Monthly
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Lewis B Gawtry, Secretary

While much may be said about the relative value of drama and motion pictures as forms of amusement, there is a certain mission that the motion picture fills which can be accomplished by no other entertainment medium. This is adding to the not overwhelming gaiety of rural life.

The reader probably here pictures some prosperous small town, rarely visited by a recognized theatrical company, and he now sees that town with its own motion-picture theatre. But imagination should not stop there, for at this point the real missionary work begins. Back from these small towns are smaller villages, and still smaller cross-road communities, where even the Chautauqua never penetrates. Yet in many of such back-country villages electricity is obtainable, usually from a transmission line carrying current to a larger town.

In this situation the rural showman sees his opportunity. Since one little community could not by itself support a motion-picture theatre, he arranges a circuit of some five or six tiny villages, from ten to twenty miles apart, and, loading his trusty machine and case of films into a runabout, he covers the circuit once a week, the local town meeting or grange rooms serving as theatres.

Each little settlement has its own night, so that farmers from surrounding districts can drive in. The manager of such an enterprise does not amass a dazzling fortune, but he does make a comfortable living. What is more, he can have the luxury of an approving conscience, for without doubt he is making a valuable contribution to the social life of the communities that he visits.

◆

New York manufacturers cannot but be in accord with that element of the preparedness campaign which seeks to mobilize the industrial resources of the country. This vast undertaking is now under way, and when the Committee on Industrial Preparedness, working under the direction of the Naval Consulting Board of the United States, completes its task there will be available a census of all the factories of the country. Not only will the record show the present equipment of the various plants, but it will specify the work for which each is best suited, should war's demands arise.

For this sweeping canvass the whole country has been divided into districts, with directing boards of leading engineers in charge in each State. In the State of New York some 35,000 firms are being inventoried. In no case so far has the local board met with definite refusal to give the desired information, and the filled-in forms are arriving at the rate of several hundreds a day.

New York, with hundreds of factories of all sorts, boasts few munition plants as such, although many machine shops are now filling war orders.

It has become a matter of vital interest to know what may be expected of the other establishments should our own country be confronted with the need of war material. Would their machinery stand idle or would some element of the complexity of war making lend itself to the equipment at hand?

In England, machinery for music-roll manufacture is now turning out gauges; watchmakers are adjusting fuses; periscopes are the output of an erstwhile jewelry manufacturer; delicate shell parts have superseded the commercial output of a phonograph factory; a cream separator factory is at work on the production of shell primers; while a textile machinery manufacturer is now turning out field kitchens. In spite of a belated start, England has mobilized her industrial resources with telling effect.

It is entirely certain that when the census of the plants in this country is completed that part which treats of the establishments in New York will show a degree of industrial preparedness which would entail little delay in turning the machinery of peace to the production of the sinews of war.

◆

New York has just witnessed its third exposition of Safety and Sanitation. Conducted by the American Museum of Safety, this was not only an exposition of safety devices but was the occasion of the bestowal of awards to companies and individuals which have made notable progress in eliminating the danger element, not only in industry, but in the ordinary walks of life. The Grand Prize was awarded to twenty-one such companies, the gold medal was bestowed upon thirty-one companies while medals of silver or bronze were presented to nineteen others.

Quite apart from the Exposition, yet attributable no doubt to the propaganda which the American Museum of Safety inaugurated many years ago, are the records of accomplishment seen in two railroad reports just issued.

According to records compiled during the fiscal year just passed only 196 persons were killed on the 250,000 miles of track operated by American railroads. The decrease from 403 in 1913 makes more evident the fact that American railroads are the safest in the world.

Of local interest is a report just issued by the Long Island Railroad. Operating a system on which there are some 1,200 grade crossings, in a territory that is one of the most popular automobile playgrounds in this part of the country, this company reports that not one automobilist was killed in a crossing accident during the past year.

In reaching this accomplishment the road not only used various safety appliances but depended to a large extent on an educational campaign wherein, by proclamations and signs, auto drivers were told of the dangers of recklessness. The success of the latter method indicates quite plainly that much can be accomplished through proper warnings, and that when it is not feasible to install actual devices for safety the educational method will prove an acceptable substitute.

Washington Bridge

By day above the sluggish tides
Whose shadowed current languid glides
  'Twixt Sound and River,
A span of mighty impulse rides
Whose towering arch in gloom abides
  Un-sunned forever.

By night against the star-filled sky
Above the waters' panoply,
  Nor shade, nor gloom,
But arched amid the worlds on high
Gleam other stars in witchery
  Of earthly bloom.

Frank A Farnsworth, Jr

Boat Building on the Harlem

WHAT if the conditions of the United States Merchant Marine are unpromising and the belligerents are curtailing American trade by using tramp steamers and liners for the purposes of war? Those are the affairs of the big interests. To the individual, the pressing problem is whether there are to be speed boats enough for the summer needs and whether the price of supplies is destined to be higher. As to the last the answer can only be speculative. Certain it is, however, that, war or no war, there will be power boats enough to provide for the enthusiasts, for Charles L Seabury & Company are operating at capacity their huge boat building plant on the Harlem River.

The building of speed boats, private yachts, and even palatial house-boats, is one of New York's thriving industries. Bath, Portsmouth, Gloucester, and other famous ship-building ports along the Atlantic coast may have abandoned the ship building art, but each succeeding year has seen an increase in the boat and yacht building business on the waterway that connects the Sound and the Hudson.

The famous naphtha launch, in its day one of the most popular of small craft, was responsible for the beginning of boat building on the Harlem. The Seaburys were the constructors of the first of these vessels, and it was not long before the six hundred men at the yard had all they could do to turn out the tremendous fleets necessary to supply the public. The naphtha launch made so decided a hit that the sailing yacht lost admirers by hundreds, and from then on the power-driven launch became the pleasure boat of the yachting devotee.

To say that the Seabury firm has been in a large measure responsible for the perfection of the power boat is not an exaggeration. For twenty-eight years this organization has been constructing speed boats for almost every nation of the world. The Chief of Harbor Police in Havana may be seen scooting about in an automobile boat that was built on the banks of the Harlem, and the Royal Family of Russia, notables of Turkey, and many dignitaries in other far-off lands possess Seabury vessels among their pleasure craft.

The Morris Heights Shipyard

The Morris Heights plant of the Seabury Company is probably the largest in the world devoted entirely to the construction of pleasure craft, or rather of small craft, for the company has built torpedo boat destroyers, naval launches and gunboats for the Government.

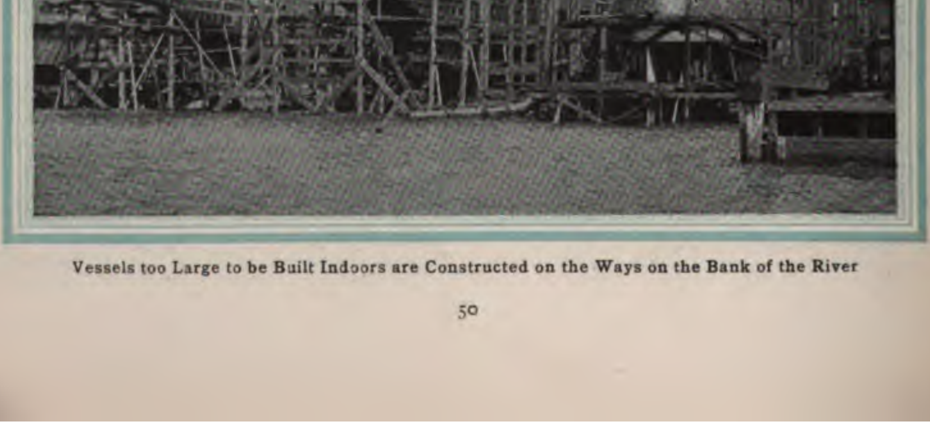
Every operation in the construction of a vessel is accomplished at the Seabury yard, and not even a small portion of the work is sublet to outside contractors. Considering this it must impress the casual reader that the firm operates a huge establishment, and this impression is borne out with a visit to the place. Several acres of river front are occupied by docks, shops, foundries, shipways and

The Morris Heights Plant of the Seabury Company is probably the Largest in the World devoted entirely to the Construction of Pleasure Craft

the like, and there have been upward of 1,000 mechanics, carpenters and shipbuilders employed in rush periods.

The motors for the speed boats are built in the Seabury foundries and machine shops, their own workmen making the castings, boring the cylinders, assembling and testing the machines and finally installing and adjusting them. The bodies for the small boats are designed in the big draughting and pattern room, constructed in the carpenter shops or on the ways and launched, all within the strip of land between the railroad tracks and the river, which composes the yard.

To follow the construction of speed boats is interesting. Patterns must first be made, for even these small boats, like the big liners and battleships, are designed in paper. This work is done in a great loft, drawing and cutting being done on the floor. These designs are used by the boat builders in the carpenter shops or



Vessels too Large to be Built Indoors are Constructed on the Ways on the Bank of the River out on the ways where the vessels are being constructed.

There are always a score or more of speed boats under construction in the carpenter shop. These little vessels are built from start to finish in a long, low building near the railroad tracks. They are even trimmed and painted, or varnished, here, and except for the installation of the motor, they are ready for launching when at last they are taken out of the building.

Vessels too large to be accommodated in these roomy quarters are built on the ways on the bank of the river. These cradles are seldom without an occupant. A yacht or house-boat under construction or pleasure craft that have been brought in for overhauling may almost always be seen.

Some of the vessels coming in for repairs carry crews of twenty-five or thirty men and have a value well in the hundred thousands. Many yachts of this type have been constructed here, and while this article is being written, the keel of a huge house-boat which, when completed, will have cost its owner $85,000, is being laid.

One can be certain that with all this work to do the various machine and testing shops, foundries, casting rooms and the like are kept constantly busy. Almost everything imaginable is accomplished in the yard. Boilers are built, gasoline tanks constructed, furniture and upholstery made, plumbing done and a dozen and one other tasks handled when occasion demands. And of course each is done in its own special department. The machine shop is a huge place occupying one entire building. Here the motors are put together, and castings, crankshafts, pistons and other mechanical parts are stacked everywhere. Practically all the machinery in this

Photographic Bureau of The New York Edison Company

Speed Boats under Construction in the Seabury Shops big shop, as well as that in the No 1 mill, which is operated in conjunction with the carpenter shop, is driven by motors, the electric service being supplied by The New York Edison Company.

The equipment at the Seabury yard is so extensive and so complete that almost anything in the line of ship construction can be undertaken whenever necessary. Under such circumstances the establishment fits in well with the campaign for national industrial preparedness that is developing throughout the country. Almost any kind of a vessel, from a torpedo boat destroyer to the latest type vessels of larger designs, could be constructed should necessity arise. Submarine "killers" could be turned out by the hundreds if this Government should ever need such craft. As a matter of fact overtures were made to this firm early in the present European war for equipment of this nature but the Seaburys had no desire to go into this particular form of construction work for any one but Uncle Sam.

Blackboard Erasers

THE sharp tattoo of the blackboard eraser is a familiar sound throughout the land. The pat-pat-pat, and the clouds of fine white chalk dust are the traditional signs that the school day has ended. It's the same everywhere—at the little red schoolhouse in the country, or the big city institutions. And the position of eraser monitor is one of much honor, albeit not a little sacrifice is involved and much whisking of clothes is necessary when the task is done.

Yet it is not considered probable that holders of these honorary positions will interpose serious objection to the introduction of a recently perfected device for removing the chalk from blackboard rubbers. The apparatus in mind follows the principle of the vacuum cleaner, to which has been added a revolving brush of stiff bristles. Placed in the opening the eraser engages the bristles, which whisk the dust into the vacuum suction. A motor of one-twenty-fifth horsepower, taking current from any lamp socket, operates the device.

The method possesses advantages of speed and thoroughness and, needless to say, it is clean, for all the dust is held in a bag within the machine. The makers announce that on application from any school authority a machine will be sent on trial.

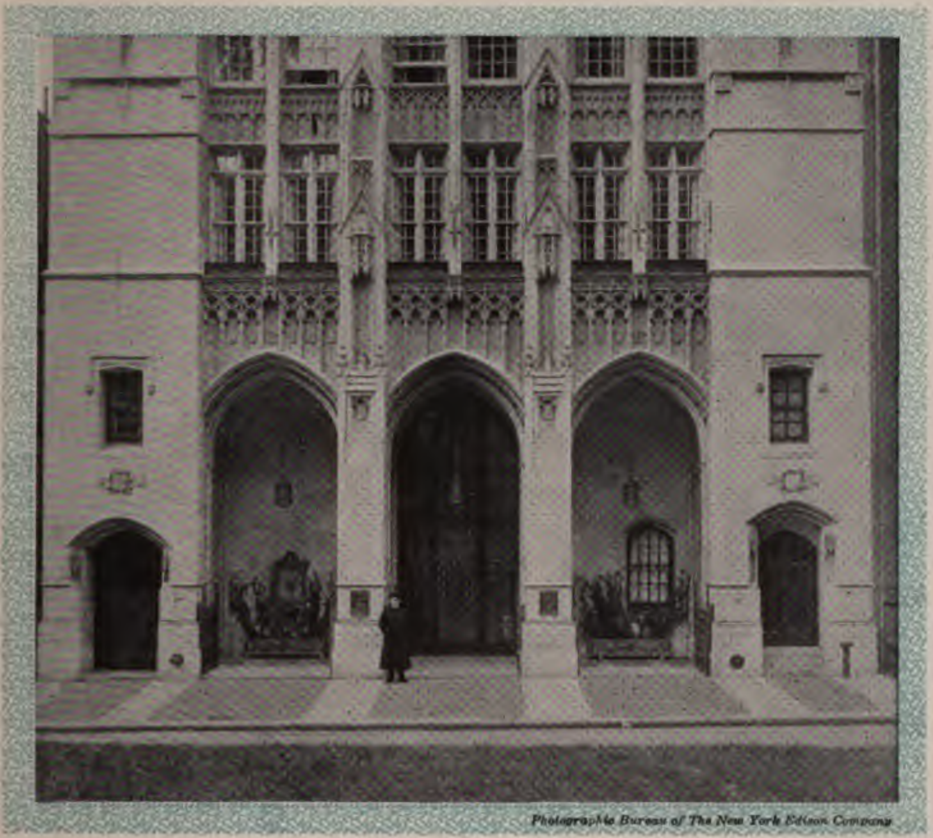
Iceproof

A SWEDISH ship-building concern is now constructing for the coastwise trade about the ice-bound waters of the peninsula a 225-foot turbo-electric ship of 2,250 tons displacement. Its normal speed will be eleven knots, for which 900 horsepower must be delivered to the propeller shaft. A single double-rotation turbine drives two alternators which deliver three-phase current to two motors driving a common helical spur wheel on the propeller shaft. Each turbine unit is rated at 400 k w and the frequency is 120 cycles. The motors will run at 800 r p m, and the propellers at 85. Slipping clutches are introduced between the motors and their spur wheels in order to guard against the breaking of the teeth of the latter when the vessel is in ice-bound waters.

Hampton Shops

WITH the growth of such affluent communities as Greenwich, Belle Haven, Tuxedo, and Glen Cove, the casual eye of the perforcedly casual observer has missed until lately the sources responsible for their embellishment. While show windows about the Avenue have given glimpses of the (for most) elusive "period," the establishments themselves seemed more elusive. The rise into common sight of great and detached institutions devoted to decorative art is thus of moment not alone to the purchasing elect but to the admiring many in whom the abiding sense of fitness is met and satisfied.

Such an institution has just emerged in the superb Gothic structure on Fiftieth Street facing the Cathedral. For the Hampton Shops



Photographic Bureau of The New York Edison Company

One of New York's most Elaborately Finished Loft Structures. The Hampton Building is Equipped Electrically with 2,000 Lights and Seventy-five Horsepower supplied from the Edison Mains

Photographic Bureau of The New York Edison Company

The Foyer, Simply Lighted and Furnished, is Indicative of the Good Taste met with at every Turn Throughout the Building

embody the charms of a whole countryside of villas with the added and immeasurable charm of public access. An effect of delightful interiors in apparently endless sequence is brought about by the use of certain floors as galleries.

More than a suggestion of these displays is given by an animated foyer. The very doorway boasts, from lintel to ceiling, the vivacious ghost of a Spanish Renaissance choir screen, adapted from an original at Salamanca. Though iron work is missing, the spirit lends itself to identical traceries of lead framing scrolls and panels of violet glass through which the morning rays disport themselves over the simple riches of this interior.

Faced and ceiled in Caen stone, the room is unaffected and doubly pleasing in impression. A feeling of welcome and open freshness is at once caught from a burst of hydrangeas mounting from a Corinthian capitol in the center. The plaster compels interest on its own account as the polychrome revival of the one-time wellheads and street basins of Italy whose use in modern surroundings is thus exemplified.

Looking down in alert approval, one Lazarus Grimaldus, Doge of Genoa, presides in scarlet state over a great mantel of Florence work whose wreaths and clusters of green and red and yellow warm the worn gray of back and moulding. Looking down, in turn, on the estimable Doge, miniature balconies boxed about with seasonable flowers mark the lunettes formed with side walls by the arches of a broadly fanned ceiling. In a resulting patio-like effect of openness and fragrant airiness the room reveals its peculiar charm.

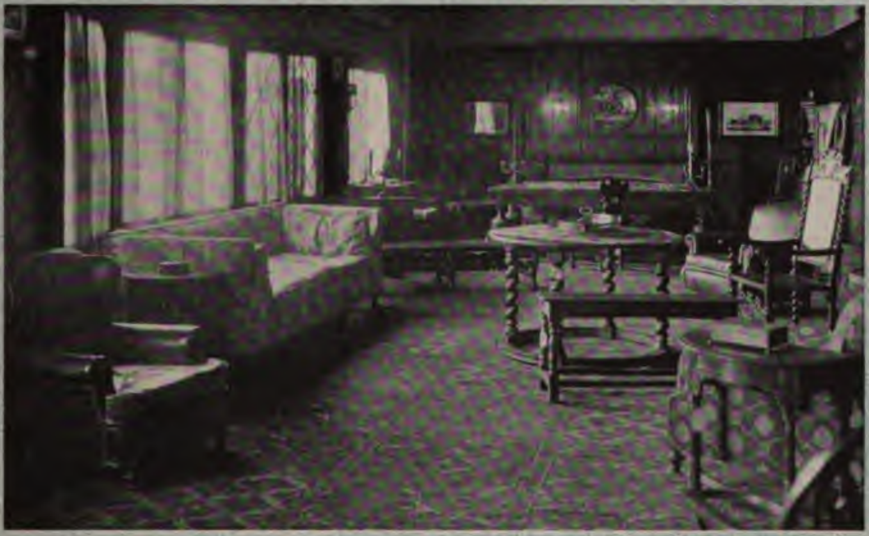
This feeling is sustained in the

skillful introduction here and there of a settle or cabinet with a stray bit of Majolica in plaque and figure. A Francis First credence deeply carved, a standard reliquary in a nearby corner, a touch of tapestry, a bench or two of oak or marble, and the foyer—for such it remains—is perfection realized.

Anticipating the nightly eclipse of the choir screen and its violet lights, electricity, adaptable as ever, appears in a branching Tuscan chandelier whose candles uphold alike a tradition and an illumination of which the onlooking Grimaldus may well be proud. A worthy and perpetual corollary shines out from the panels of two processional lanterns lighting the entrance to a great hall within.

While a word should be in order describing this hall with its encircling mezzanine, its lofty window of varied colors, and its harmonious wealth of fabric and furnishing, unfortunately at the present writing it stands unfinished. The reader's attention is instead invited to one of many completed interiors above stairs.

The apartment in question, oak paneled and at first glance sombre, reproduces a living room of the days of the Stuarts. Long, and favored by a leaded bay with low, flanking, façade windows, its arrangement permits of conversational groupings. Appealing readily, a mantel at the eastern end shows an open grate with inviting knickknacks on the shelves above. In close and purposeful cooperation and facing the hearthstone, a snug divan presumes, as doubtless it did of old, a certain variety of conversation in which the remainder of the room boasts no legitimate interest. Aiding the im-



Photographic Bureau of The New York Edison Company

A Stuart Room possessing in Electric Lanterns, Brackets, and Table Candles a Lighting Harmonizing with the Period Effect

pression from their mantel eminence, two lanterns, electrically but judiciously lighted, preside over this enviable domain.

The sombreness notion thus somewhat dissipated, one turns with new interest to a gathering of broadly carved pieces—leathered chairs, a silver-serviced stand or two, with a couch filling the capacious bay. That the second Charles extracted considerable from this grudging life cannot be disproved by such witnesses of ready if substantial comfort. What with

> "Portraitures of huntsmen, hawk, and hound,"

a yielding cushion, a foot-rest of cavalier amplitude, genial lamps, and the picturesque converse of a picturesque following, this royal exemplar of Merrie England would appear to have fared in a manner befitting. Under the circumstances, two imposing corner clocks claimed, no doubt, a mission solely and peculiarly decorative.

Gracing the extreme end of a prodigious Khiva that with other Persian weaves eased the footsteps of the day, is discovered a third grouping. An ample chest, scratched and worn; a black, angular table, eloquent of use; a cabinet that of old held the linen of an industrious home circle; a veteran brazier; straight-backed chairs with a bench for the children—and behold the domestic work corner. Its proximity to the group just noted must not be questioned. Such bespeaks, and faithfully, the simplicity of an age in which the relationship of work and play was but little distorted by considerations of class or "period" embellishment. A candelabrum, to be sure electrically lighted, completes the picture of real but unconscious sixteenth century at-home-ativeness.

Neighboring interiors—Italian, French, Spanish—in many styles and types and phases offer glimpses of their respective epochs. Directly communicating, a Chinese room of Chippendale persuasion—gay with screens, panels, much be-broidered lamps, and the gold and black of plaques and inlays—commands the most exotic of tastes. Within eyeshot, pointing a bewildering ingenuity of arrangement, a Regence boudoir invites only to mystify with its silks and subtleties the prosaic gaze of the uninitiated.

But time fails. And in truth, to review even in hasty recollection the field involved is to surmise the limits of a more detailed pen than the present. Fortunately, as remarked at the start, the institution stands out in assertive but winning self-sufficiency. That its treasures of many lands and centuries are thus observable argues well for the discriminating homemaker.

"Period" Without a Struggle

With *Amende Honorable* to Don Marquis

Lamps there are the world holds dear:
Hanging, bracket, and torchere.
Those yclept that genial prince
Who ruled and robbed as Louis Quinze
Appeal to some, and some of course
Laud the taste of Lou Quatorze.
Folks have sought to take the prize
By lamping rooms with Louis Seize.
A fussy few are on the fence,
But *I* prefer the fair Regence.

Julien C Beckwith

Serving Brokaw's

AMONG the many old-time institutions of the city which have recently displayed a fresh glow of youth, none has accomplished quite so complete and striking a transformation as has the firm of Brokaw Brothers in the change from the old building at Astor Place to the present new structure on Broadway near Forty-second Street.

And not less in the matter of merchandising and selling than in the matter of habitation has Brokaw Brothers lately revolutionized past practice. Some few years ago it was thought sufficient to carry clothing of standard quality; today it is not only necessary to carry it, but it must be attractively displayed and the environment in which it is sold must be spacious, pleasing to the eye and exhibiting a high degree of good taste. All of these things the Brokaw firm has realized and put into practice, with the help of an unusually well-planned and well-executed lighting system, supplied with current by The New York Edison Company. Not only are the showrooms themselves admirably lighted, large hanging lamps patterned after an old English design being employed, but every showcase and fixture is equipped

Photographic Bureau of The New York Edison Company

The New Home of Brokaw Brothers, at Broadway near Forty-second Street, Receives its Electrical Supply from The New York Edison Company

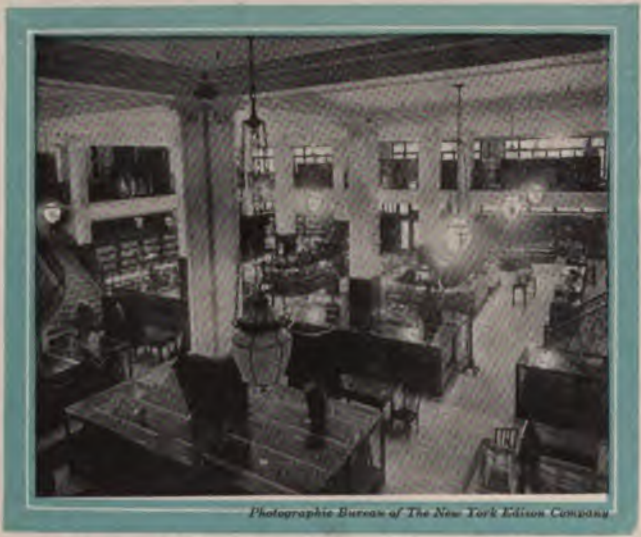
with well-concealed incandescents.

The profusion of showcases with which the store is supplied is one of its most striking features, every available bit of wall space being utilized in this way. The short reaches between the elevators are occupied by small cases, the entire side wall of the second floor presents an unbroken array of such displays, and nooks and corners which would otherwise remain waste now serve a useful purpose. These well lighted and attractive showcases, by constantly yet unobtrusively suggesting to the customer various articles which he might find of interest, perform an important function of salesmanship.

The main floor of the store is devoted to staple articles of clothing. The Broadway side houses the smaller articles of haberdashery, such as hats, collars, shirts and neckwear; shoes may be found on the gallery, while the Seventh Avenue side contains the displays of suits. These are contained in glass showcases separated by ten-foot aisles which in turn are furnished with walnut tables, chairs and mirrors. The lighting of the entire floor is accomplished so evenly and satisfactorily that no shadows are encountered and no extra lights are needed for use at the glasses.

In the basement, which is termed the "College Shop," sporting goods and clothing for younger men are to be found. This department, an innovation for Brokaw's, is entirely shut off from daylight and yet its lighting is of such unusual character that it is hard to realize that it is artificial.

The third floor is the domain of the small boy. Here may be obtained all that the boy or youth will need in the way of clothing, and having thus become accustomed to Brokaw methods and Brokaw goods as a boy, it is assumed that he will continue to trade with Brokaw when he reaches manhood. A part of this floor is given over to the boy's mother. The rest room, decorated and furnished in the blues and reds and golds of the Louis XVI period, provides writing tables, magazines and other things to make for her comfort and convenience. Closely adjoining this room is a specially designed and equipped children's barber shop. It is under the supervision of an expert,



Photographic Bureau of The New York Edison Company

The Spacious Aisles and Well-Planned Illumination of the Main Floor

Photographic Bureau of The New York Edison Company

Formal Attire is Displayed under Conditions Simulating as nearly as possible the Environment in which the Garments will be Worn

not only in hair-cutting, but in interpreting and humoring the mood of a child.

The second floor is used for the display of the blues and blacks and more formal garments of a man's wardrobe. On this floor is a room of unusual attractiveness devoted exclusively to the formality of evening clothes display. It is well to make announcement of this beforehand for the room itself would never give a hint of its purpose. The touch of a button by the salesman throws back a fumed oak panel and reveals a rack of dress coats. Another panel conceals the pier glasses and still another hides the entrance to a dressing apartment. The room itself is paneled to within three feet of the ceiling with heavy wainscoting and is lighted by side brackets, hanging domes and table lamps. Here, as in the basement, no daylight is admitted—and it is never missed.

But illumination is not the only function of Edison Service in the Brokaw establishment. The four floors immediately above the boys' department are devoted to storage, cutting rooms and the alteration department. Here electricity is put to many different tasks. In the stock rooms convenient lights are placed over the racks and tables, in the alteration department, where more than a hundred men and women are employed, thirty electric irons and motor-driven sewing machines are used and in the cutting rooms, on the seventh floor, electric rotary knives cut through from thirty to forty thicknesses of cloth. These are only made use of in shaping linings and paddings, the suitings themselves being cut by hand. From the cutting department these suits are shipped to the workshops on Lafayette Street, which also use Edison Service, where they are finished and sent back into stock.

Power in more liberal measure than for sewing machines and rotary knives is to be found in the basement of the building, where some thirty motors provide tractive force for the seven elevators, the vacuum cleaner system, the ventilator system, the pneumatic tubes and the automatic fire sprinklers with which the building is generously supplied.

Trade Training for Girls

THE old exploded New England idea that everybody ought to go through college persists only in the more hard-shelled districts of that province. Today a widespread modification to the effect that everybody ought to go through high school is being refuted by what are known as vocational trade schools. Just what these schools are and are accomplishing is well brought out by the Manhattan Trade School for Girls.

The institution, on the north side of Twenty-third Street a little east of Third Avenue, is handling at present seven hundred pupils. The girls are admitted on elementary school certificates and are ready for their working certificates after a year's training. Every Monday sees newcomers. There is no expense to the pupil, even lunch being served in the building at prices that can only be nominal.

Instruction is given in any one of ten skilled trades, employment in which is secured each graduate. These trades include dressmaking, millinery, machine operating in several textile lines, sample mounting, and novelty work of various sorts. Supplementing this training, the school requires instruction for all in business arithmetic and English, applied design and acquaintance with textiles, and lessons on trade ethics and industrial conditions. With such training the girls emerge fitted for steady and paying occupations suited to their taste and capability.

Photographic Bureau of The New York Edison Company

Straw Hat Making. Bands and Crowns are Quickly Woven on these Motor-Driven Spindles

The results accomplished reflect an equipment which, while sparing of the ornamental, is practical to a degree. Each classroom or, rather, workroom, is large, amply lighted and ventilated and arranged to the individual advantage of every girl. In work where electricity would apply, and there is much of this, motor-driven apparatus is made good use of. The clothing machine room, for example, shows more than eighty machines in series, placed and run after the manner of the most progressive establishments. At one series of twenty, new pupils are set to work stitching aprons. At another, the girls handle simple waists; and at still another attention is given the more complicated seams and linings of whole garments. Nearby, in straw-hat making, similar machines, twenty strong, are employed in the more or less intricate work of stitching brims onto crowns and the several strands of brim together. A reduced but practical version of the modern big embroidery machines gives the necessary experience to girls preparing for such work.

Photographic Bureau of The New York Edison Company

Sample Pasting and Mounting are Accomplished with the Aid of Electric Irons and Electrically Heated Paste Pots

Electric irons appear in every classroom, though not in the numbers usual in the ordinary manufacturing loft where work is more rapid. Enough are supplied, however, so that every girl is able to press out the garment she has just sewed or embroidered.

With the exception of an iron or two, current is not required for the varied and delicate work of the millinery classes. Associated with this department is a class in lamp-shade and box making, where the ever present paste pot is kept heated on an electric grid. The relationship between these two departments illustrates the policy of acquainting pupils with a trade other than the one specially chosen. By this means provision is made for employment during the off seasons which occur in most trades of this sort.

Gymnasium work, which is required of all pupils, takes place in a large, well-fitted room on the ground floor. The ceiling lights here are protected as usual by basket-ball guards. Below stairs is the lunch room, rather cramped for the time being.

Visitors, before leaving, are invited to inspect a tastefully arranged salesroom where in counters and cases are shown dresses for grown-ups and children, hats and boxes, and novelties of all kinds. Especially interesting are the lamp-shades—some of paper, some of silk designed for hanging or table lamps—characteristic examples of which are used in the lighting of the room. Such are the sales that the total cost of all school supplies is met with an excess of several thousand dollars applied on general running expenses.

Photographic Bureau of The New York Edison Company

A Half-Hundred Motor-Operated Sewing Machines Lend to these Garment Classes the Reality of the Up-to-date Manufacturing Establishment

New Mica Process

ANOTHER industrial development arising from the necessity of supplanting German processes stopped by the war is found in the special treatment of mica by the Carolina Mineral Company. This progressive concern is extracting the mica in large quantities and is cutting and stamping it in various kinds of pieces, such as washers, disks, etc, for use with magnetos, rheostats, and other electrical apparatus. Thousands of pounds of the product are being purchased, in quality, it is said, equal to the best India mica. Special work of a sort heretofore done in Germany has made it imperative for the company to double its manufacturing force.

From Pasture to Pasteurizer

NEW YORK has an enormous appetite for milk. Not less than two and a quarter million quarts are consumed daily, which means that the city pays tribute to the humble cow to the extent of some sixty-seven million dollars a year. On second thought the cow is not so humble after all.

Until about two years ago this milk was delivered to consumers just as it was received from the dairies. That is, no organized attempt, other than the inspection of cattle, was made to prevent the carrying of disease by the fluid. Now it has to be pasteurized—a process in which electric motors play an important part.

Coney Lights

Peeling plaster and reeking paint,
And things that shriek and bray;
And crowds that shuffle drearily
Upon the dusty way.

Behold! The fans of sunset fold,
And swifter than a thought
Across the countenance of night
A miracle is wrought.

Fountains shoot jewels to the stars,
And rainbows arch and fall;
While sprites and fairies whirl along
In reeling carnival.

Otto Smerka

As early as 1870 New York physicians had recommended that milk be boiled to destroy bacteria. But this was usually in the form of advice to patients, and never contemplated any commercial effort to treat milk in bulk.

For some time prior to 1912 a small proportion of the milk sold in the city was subjected to a process of "flash pasteurization," and in the following year it was ordered that when milk was to be pasteurized the holding process be used. In February, 1914, it was made compulsory that all milk not complying with the minimum requirements of Grade A raw milk be subjected to this treatment.

About one-tenth of New York's milk is pasteurized in the city, the rest is pasteurized and bottled at the plants in the dairy districts. The Borden Company, one of the largest concerns supplying New York, maintains four city plants, one in the Bronx, one in Harlem, one in Brooklyn and one in Long Island City. It is significant that while steam is available at all these plants—it is used in heating the milk to the point of pasteurization—the mechanical operation throughout is by means of electric motors which, with the exception of the Bronx, receive current from the central station supplying the district. Under this arrangement the Harlem plant is supplied by The New York Edison Company, the Long Island City plant by the New York and Queens Company and the Brooklyn establishment by the Edison Electric Illuminating Company of Brooklyn.

Milk for city pasteurization comes from the country in cans holding forty quarts each. In Brooklyn these are elevated to the top of the building by conveyors which have a capacity of from 2,300 to 2,400 cans every twenty-four hours. They move from the elevator in an unbroken procession—during which the fluid is inspected—to a huge receiving vat. Here the milk is poured and the cans move on to be cleaned and made ready for the return to the dairy. At the Harlem, Bronx and Long Island City plants, the cans are emptied on the ground floor and the milk is pumped to the top of the building. With this exception the processes are practically the same. Filtration is the first step in preparing milk for pasteurization. From the filtering tank the milk flows to the level below, where it passes through clarifiers and is pumped into pipes in which the first step of actual pasteurization takes place.

Pasteurization, it should be explained, consists of raising the temperature of the fluid to between 142 and 145 degrees F, and holding it at that point for thirty minutes. While this treatment does not change the chemical quality of the milk, it does destroy all the disease-producing micro-organisms. If complete sterilization were employed, that is, if the milk were brought to the boiling point, practically all the bacteria would be destroyed, the milk sugar would become somewhat scorched, the casein and albumen would be hardened, the calcium, magnesium and phosphoric salts would be partially precipitated, and the digestibility of the milk might be impaired. The commercial objection would be that the cream line would be interfered with or entirely destroyed.

The pipes in question are of sufficient diameter to admit smaller pipes carrying steam. As the milk flows through this piping system the steam raises the temperature, and when the proper point has been attained the fluid is carried into a holding tank which maintains the temperature, and where the milk remains for the required thirty minutes, undergoing the while constant agitation to prevent cream from rising.

Drawings by Edward A Wilson

Straining the Milk. The First Step in the Process of Pasteurization

This holding tank is equipped with automatic devices which not only keep the temperature at the proper point but also serve to open the tank at the expiration of the half hour, discharging the milk into the cooling system. The chilling process requires just double the amount of piping needed in the heating process. As the fluid passes through the cold pipes the temperature is reduced, first by well water which surrounds the milk pipes, and finally by brine pipes which send the temperature down to 45 degrees F. The cooled milk is carried to a reservoir on the same level which is connected directly with the bottling machines below. Flow from the reservoir to the bottling machines is controlled by float valves.

In less than Forty-five Minutes after Entering the Building the Pasteurized Milk is Bottled and Ready for Distribution

While the milk has been passing through this process of pasteurization on the upper floors of the plant, the bottles on the ground floor have been going through a sterilizing process. Empty bottles, after preliminary washing, are placed in boxes, turned upside down and passed through a washing tank, where they successively undergo a jet of hot water and soap, then a rinsing in clear hot water and then a bath of live steam. An elevator carries these boxes of clean bottles to the filling room upstairs.

The machines here consist of a milk tank at the top and a revolving carrier at the bottom, with the necessary valves and connections. Bottles are placed on the revolving carrier, which lifts them to the filling valves with sufficient pressure to cause the milk to flow. Filled bottles come out at the opposite side where they are caught by the capping machine, which seals them with a cardboard disc. The filling and capping process is so rapid that filled bottles go back into the same boxes in which they, as empties, had arrived on the floor hardly a moment before.

This completes the process of pasteurization and bottling. The milk, in less than forty-five minutes from the time it has entered the building in cans, is on the big milk trucks ready for delivery to the various depots.

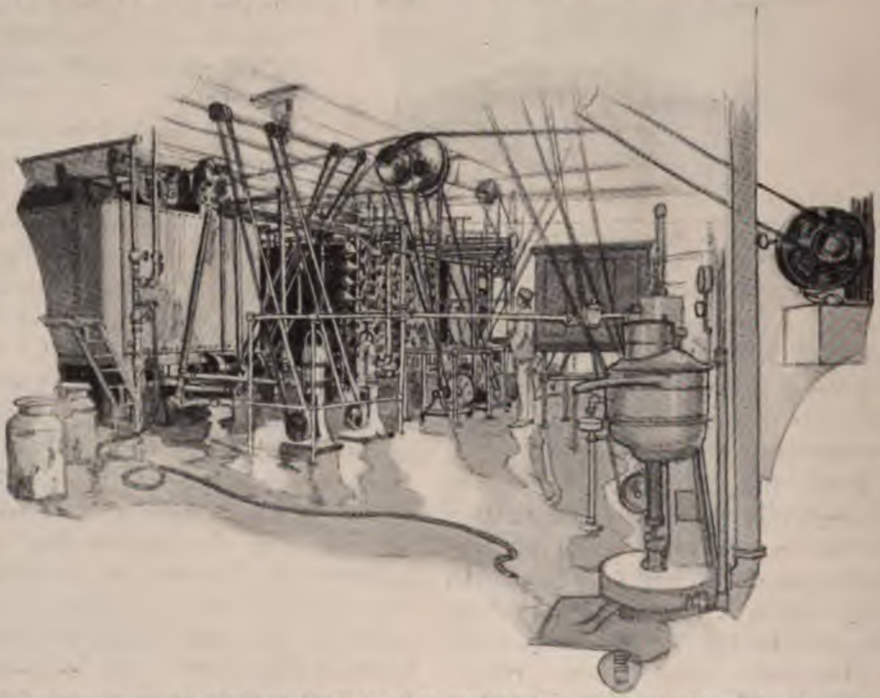
It has already been said that all the mechanical work of pasteurizing is accomplished by electric motors. In the plant in question the installation consists of thirteen horsepower for operating the pasteurizing machinery—five horsepower for operating the can elevator, seven horsepower for ice making and crushing, ten horsepower for a brine circulator in the refrigerating system, more than one hundred horsepower for bottle washing and sterilizing, one horsepower for each of the six bottling machines and three horsepower for carrying the cases of bottles to the shipping platform.

Since the purpose of pasteurization is to produce milk that cannot be harmful to consumers, every precaution is taken to see that high standards of cleanliness are maintained. Samples of milk are withdrawn from the system regularly for bacteriological tests, bottles are observed to see that the proper quantity of cream is at the top and, in keeping with the high standards of cleanliness, the men are provided with fresh laundered white uniforms every day.

The receiving tanks and the piping are heavily coated with tin, the holding tank is of porcelain, the milk reservoir is glass lined, while porcelain is used for lining the tanks of the bottle-filling machines.

The entire pasteurizing equipment is cleaned every twenty-four hours. The milk is withdrawn, pipes are taken apart, valves removed and a thorough scouring with soap and water is given every part of the system. This is followed by a rinsing with cold water followed by sterilization with steam. Then the apparatus is reassembled and the plant made ready for the next day's work in the continual fight to provide New York with safe milk.

The Japanese export trade in insulated electric wire during the eleven months ending November last aggregated $400,500, compared with $155,600 the year preceding.



Clarifiers, Steampipes, Holding Tanks and Cooling Pipes at the Brooklyn Plant of the Borden Company

"Chronic" Cases

PROBABLY the first thing that commended a watch to you was its tick-tick-tick, and running the mysterious sound a close second was the picture on the back. This, at the advanced age of two, was before you realized the utilitarian purposes for which the instrument was constructed. It was the sound of grandfather's chronometer that moved you to explore deep pockets until you found it.

Though the avowed *raison d'etre* of a watch is to keep time, the business of making it a thing of beauty has assumed even greater proportions than the production of the works themselves. For a few hundred dollars it is possible to procure as fine a movement as is made, but there is no limit to the amount which may be expended for bejewelled cases.

The American Watch Case Company boasts a factory in West Twenty-fifth Street which embodies all the latest electrical appliances known to the goldsmith's craft. More than one hundred motors are in use, having been adapted to every phase of the goldsmith's work save the engraving and engine-turning of the cases. From the moment the gold and platinum comes from the melting pots, the fires under which are stimulated by the addition of oxygen furnished by electric blowers, to the time the movements are fitted into them, the cases are molded into shape with the help of electrical apparatus.

The metal, formed into bars of approximately three-quarter-inch thickness, is rolled flat through a motor-driven press. The next step is to cut out the various parts of the case on huge stamping machines and to shape them on the hydraulic press. This last is capable of exerting a pressure of five hundred and fifty tons to the square inch. After this process the cases go to the finishing men, who use electrically driven lathes for turning, shaping, drilling and polishing.

Individual Motor Drive

The motor equipment of the finishing tables is rather unusual. Individual drive is employed in each instance, with a foot control which leaves the machine at all times perfectly responsive to the operator. Small motors are mounted on hollow, cast iron stands, about two feet in height, which carry the wires inside and allow of the placing of the motor and lathe at any desired angle. It is not necessary to mount the machine parallel to the straight edge of the table, as is the case where group drive with belt transmission is used, for the motor and machine, being separate units, can be fixed at the angle most convenient to the particular process for which they are used. Each motor is an individual unit in every sense and has a separate fuse box and a rheostat, so that motor trouble, when it does occur, is purely local and does not affect the rest of the plant.

Aside from the front and back plates and the centre of the watch-case there are a number of other parts which require special attention. Chief among these are the watch pendant and the bow. The pendant, through which the winding and setting stem protrudes, is produced on a machine called a turret lathe. This motor-driven piece of apparatus is capable of peforming eight operations and, under the hand of a skillful operator, takes the gold in the rough and turns out a finished piece. The metal bar is fed through to what might be termed the mouth of the machine and there, while rotating, is confronted by a turret which contains some six different tools. Each of these in turn is brought to bear on the gold. When the operations are completed a sharp knife edge cuts off the finished pendant.

Among the many highly interesting processes to be followed in the shops in question is that of wire-pulling. The machine, motor-driven of course, and occupying a floor space about eighteen feet in length, can produce wire of thread-like size, or can pull it square, or diamond shaped. A pair of vicious looking steel jaws travels the length of a slotted guide. At the one end of the guide the jaws are blocked by a plate through holes in which the soft gold is pulled. The operator stands at the back of the plate through which a portion of the gold bar has been forced and, with a swing of the lever, starts the jaws sliding toward him. As they meet the obstruction at the end they close on the protruding metal and back off in the opposite direction, pulling a golden thread after them. This operation is repeated time after time, the gold being forced through smaller and smaller holes until it has reached the desired size. The machine operates with

Photographic Bureau of The New York Edison Company

Another Application of Individual Motor Drive

Photographic Bureau of The New York Edison Company

The Wire-Pulling Machine

a noise and a smash that would seem to belie any fineness of production, but it is in fact one of the most delicate of processes.

Another very interesting but not yet electrically driven machine is that which produces engine turning. Originally there may have been some good reason why this geometric design was called engine turning, but it certainly is not to be found in its present method of production. It is an engraving process of exceeding fineness, accomplished by means of a foot-power lathe which moves the object in a regular progression and produces the most beautiful and varied designs.

Photographic Bureau of The New York Edison Company

Motors Installed by the W Green Electric Company are Used in the Various Processes of Turning and Polishing

The polishing heads, as the buffers are called, are covered in the back with hoods which operate much on the principle of vacuum cleaners, sucking all the dust of the polishing process into a common bin. This dust, as is every other bit of waste material in the shop, is carefully refined. The gold thus collected, together with that salvaged from the water in which the operators wash, reaches the worth-while total of several hundred dollars each month.

The electric equipment of The American Watch Case Company's shops has been in operation now for a trifle more than ten years. The factory manager tells some very interesting things regarding the effectiveness of his equipment. In the whole period his repair bill for motors and equipment has not exceeded $300 and the loss of time occasioned by repairs has been *nil*. In case of motor trouble, which is a very infrequent occurrence, the bothersome unit is disconnected and removed and another motor put in its place. And in addition to these advantages, the cost of operation has run about half what it was in the days when steam power was purchased from the owners of the building.

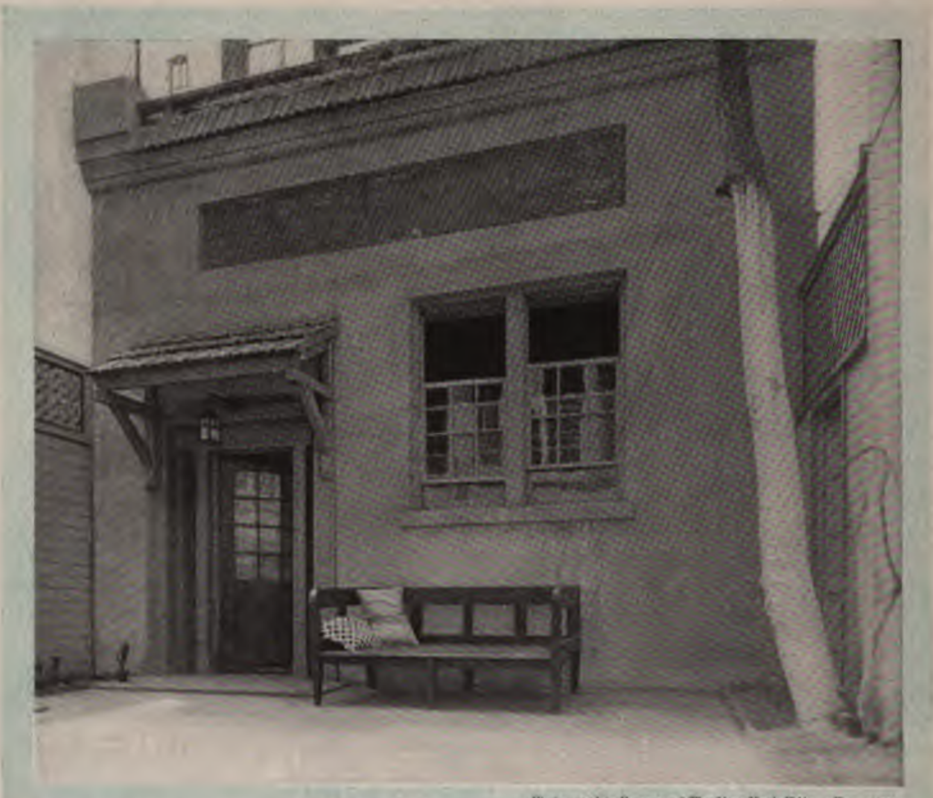
According to a recent Consular report, the water-power of the rivers of Spain exceeds a million horsepower, of which hardly more than 300,000 horsepower has been developed.

The Pepe Idea

WHILE regret may be general over the prevailing architectural barbarism of the 1860's and 70's, the attempts at remedy in the case of the average dwelling house have been few. The Edison Monthly has voiced its appreciation of the reconstruction taking in practically the whole Nineteenth Street block between Irving Place and Third Avenue. Similar interest is invited by the Pepe houses about the Washington Square vicinity.

What Pepe and Brother, who believe in the future of the neighborhood, did to the dowdy complacency of these properties would make one of the most engaging volumes of the year. Mention will be made here of two of their accomplishments.

At 124 Waverly Place stood a four-story, brick, eighty-five year-old commonplace used for some time as a rooming house at a final rental of



Photographic Bureau of The New York Edison Company

A Pepe Studio of Concrete Construction reached in Latin Quarter Fashion through the Basement Hall of the House Fronting upon the Street

$1,000. Such a rental, combined with repairs and taxes, could mean but one thing. The new owner, a convert to the Pepe idea, set about remodeling as follows:

First came out a centre brick pier at the front, giving place on each floor to a large studio window. Artistic iron balconies were supplied these windows, the wall itself having been stuccoed in the European fashion. Place was given the one treasure the house possessed, a fine doorway of Colonial antecedents. Rearrangement inside converted the basement into a rear apartment for the janitor, and a single-room studio and bath facing the street. The parlor floor was left as it was except for the providing of a kitchenette. On the second, third, and fourth floors baths were put in, and partitions removed to make a big front studio room. Above these, beams were raised to provide an additional studio boasting, besides its front balcony, a fascinating bay window at the back. Electricity is evident in ceiling bowls in the hallways and in lamp brackets of Colonial design in the apartments.

A further and even more characteristic Pepe development occupies the area behind this house. Approached through the house basement, the building proves to be a concrete studio a story and a half high. Mostly window, as seen at first, this wholly compelling curiosity comprises for the main part but one large room. A giant fireplace, window seats, screens of the futurist persuasion, wall sketches in lead and color, rugs, pillows, and a grand piano make up the delightful impression of this interior. A finishing touch is given by a balcony reached by simple stairs and affording in its limited space a kitchenette and sleeping room. From the latter a shuttered window looks quaintly down on the studio beneath. While the present occupant pays high rental, there are dozens of prosperous artists who watch and wait.

Photo Bureau of The New York Edison Company

An Old World Oasis among the Run-to-Heel Properties of Waverly Place

A remodeling as notable as that of the house described has been

Photographic Bureau of The New York Edison Company

A Studio de Luxe. In the Balcony are Sleeping Apartment and Kitchenette

carried out at 50 West Twelfth Street. Of sixty years service, this property also had arrived at the rooming-house stage. The alterations included a general cleaning up, partition changes, and the providing of baths and kitchenettes. French windows were planned and modern heating and electric light installed. Here, too, fireplaces were built in wherever possible. The house's distinct treasures, in this case old Colonial locks and knobs, were recognized and permitted to continue in service.

The question of a suitable lamp for the entrance was solved at a local antique shop from the fastness of which emerged, after much searching, a brass lantern of the old candle days. The substitution of an electric bulb was simple enough.

To one unfamiliar with the Washington Square atmosphere the eagerness with which these studio apartments are sought after may appear puzzling. As a matter of fact, they afford to a singular degree that Old World feeling perceptible even to the casual visitor about the neighborhood. Their very newness has in some instances been disguised by a voluntary discoloration of plastering and the acid treatment of paint. The introduction of electricity and other modernisms in this artistic environment is only a bit of translation. And translation, as everyone knows, deserves credit among the finest of the fine arts.

Battery-Driven Fire Apparatus

ONE of the most interesting applications of the electric truck is to the service of fire-departments. Considerable time was devoted to the discussion of this subject at the National Electric Light Association convention in Chicago. It was pointed out that equipment of this kind is now in successful use in New York, Philadelphia, Camden, New Jersey; Springfield, Massachusetts; Akron, Ohio, and Hartford, Connecticut, and in Berlin, Hamburg and other European cities.

The experience of the Philadelphia Fire Department is an interesting case in point. Nine pieces of electrically operated fire apparatus are in operation in the city and in two of the fire houses there have been quartered at the same time gasoline, electric and horse-drawn vehicles. On average runs up to a mile and a half the electrics have invariably been the first to the fire, the highest recommendation a piece of fire apparatus could have.

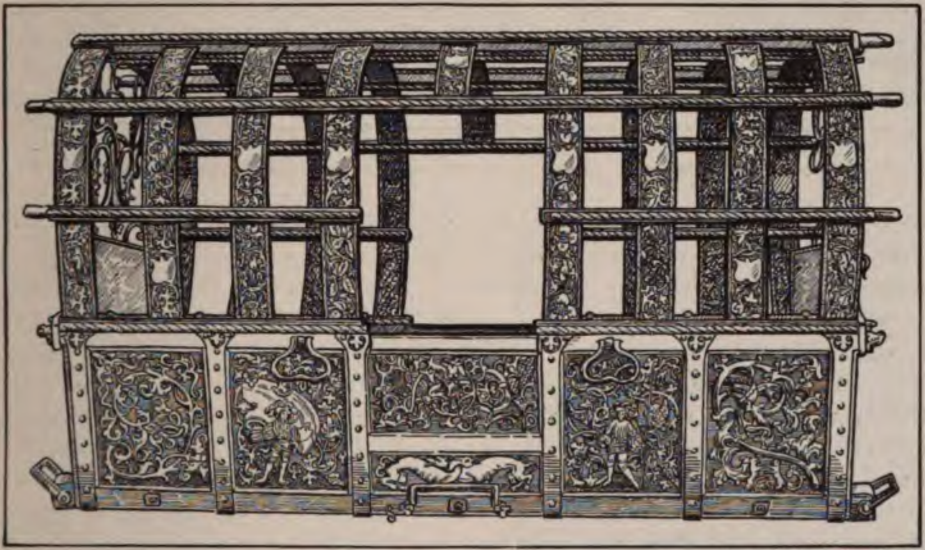
The Electriquette

NEITHER Leonardo da Vinci nor Francis Bacon mentioned the "Electriquette," otherwise known as the "motor chair," in their famous forecasts of future inventions; but notwithstanding the oversight, here it is. Or, rather, to speak veraciously, *there* it is, for having gathered its credentials at the Golden Gate, it is making a triumphal journey eastward.

It comes with the sanction conferred by use at the San Diego Exposition, and with the great seal of approval bestowed by the Panama-Pacific. From the West it comes, "a miniature automobile," to quote the words of a maker, "raised to the *n*th power of simplicity," and though the topmost speed of this self-propelled rolling chair is but four or four and one-half miles an hour, it may be expected to capture Eastern resorts of the sanitarium and seaside varieties before the now unessential chair pusher has had time to effect other arrangements for a satisfactory occupation.

Incidentally it may be said that vulgar speeds can readily be provided for those unacquainted with the aesthetics of motion, since the new vehicle is by no means a fragile piece of bric-a-brac, but, notwithstanding its phaeton softness, a substantial carrier at any reasonable speed demanded by the classes of people whom it is designed to satisfy.

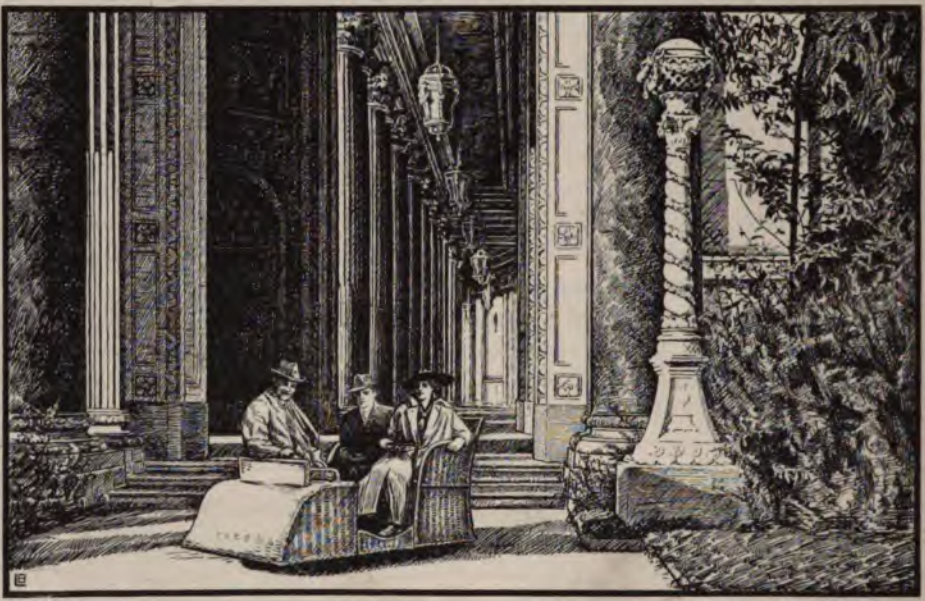
And they are the people whom invention has hitherto passed by, those who by reason of gout, rheumatism, accident, or other misfortune,



Drawing by Edna Hood Lissak

A Litter of the Middle XVII Century in the Palace of Madrid

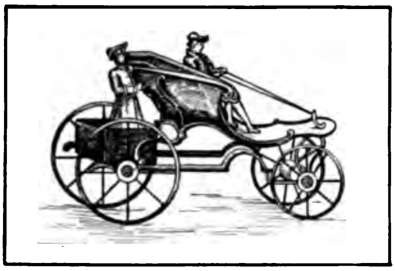
have perforce to choose between bedroom confinement and too intimate bath-chair attendants, or those who, despite normal physique, have an instinctive aversion to the ignominious bipedal exercise thoughtlessly provided by nature. To all such, to those who could not walk if they would and to those who would not walk if they could, especially to those who do not measure enjoyment in riding by the pressure of wind upon the ear-drums, the Electriquette comes as the last word in vehicular comfort.


Drawing by Edna Hood Lissak

Miniature Motor Vehicle at Panama-Pacific International Exposition, San Francisco, 1915

The front hood and fore-and-aft contour remotely suggest a low-bodied, rakish automobile, but it is first and last, in purpose and execution, a wheel-chair, a sober-going, motor-driven, sidewalk vehicle, designed to replace man—and not horse—power. Its true ancestors are the sedan chairs, jinrikishas, invalid chairs, multiple chairs, velocipedes, tricycles, and bicycles of former days.

The dominating impulse to find mechanical substitutes for legs and feet may doubtless be traced to the cave men, but at a comparatively recent date the inventive and erudite Egyptian had made little progress, though it is alleged that mingled with his hieroglyphic writings were figures bearing a faint resemblance to the velocipede. Be that as it may, even the luxury-loving Roman possessed, with all his wealth, his marble palaces and famous baths, but few mechanical contrivances to minister to his comfort. In fact it was not until the close of the Middle Ages that substitutes for the litter, sedan chair and palanquin were sought. The thirteenth century found the wheelbarrow in use for the transportation of the sick, and



Drawing by Edna Hood Lissak

John Vevers' Horseless Carriage, 1766, was propelled by the Footman, who bore his Weight Alternately on the Lever Planks beneath the Vehicle

it is stated in a recent article that there is extant an old print of the sixteenth century, showing a man-pushed, wheeled contrivance similar to those seen at seaside resorts.

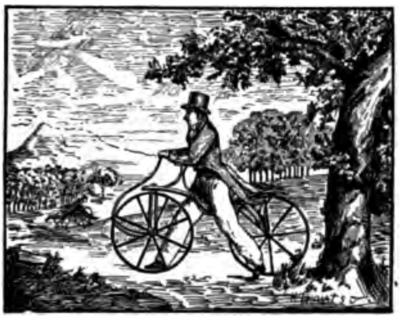
In 1766 John Vevers had developed a horseless carriage which took its motive power from the footman. No frosty-countenanced dignitary with arms folded and eyes front was this individual. His task was a real one for he had to balance himself on the more or less precarious foothold of two levers and by shifting his weight first to one and then the other, impart a reciprocating action which was transmitted to the front wheels. The rider steered by means of lines, much as though he were driving a team.

The velocipedes of the early nineteenth century were virtually hobby-horses, mounted on two large wheels, the motive power being supplied by pushing against the ground with the feet. On a day of uncertain date the inhabitants of a Swiss village were startled by the sight of the Baron von Drais of Manheim riding, it appeared, to certain destruction at the terrific speed of six to eight miles an hour on one of these contrivances, invented by the Baron himself. Though of crude workmanship, it was of better construction than many of the devices which had preceded. Its movements were guided by a handle-bar attached to curiously curved forks, and it bore withal a far-off resemblance to a bicycle.

Many and strange were the devices employed during the next decade in the effort to find a means of propelling the machine with the feet raised from the ground, for the crank movement had not yet been applied.

The principle of the multiplying wheel had long been known and used for various purposes, and by the third quarter of the century hand-propelled bath-chairs, similar to those still in use, were not uncommon at seaside resorts, but their movements were slow and not easily directed, so they gave place to the hand-pushed chairs, first exhibited, it is said, at the Paris Exposition of 1889.

Meanwhile the bicycle and tricycle experienced no improvement and did not come into general favor until 1869, when, following the introduction (in 1866) of an improved velocipede by Pierre Lallemont, of Paris, more than fifty patents were recorded at Washington in a single month. And



Drawing by Edna Hood Lissak

The Pedestrian Hobby-Horse. London, 1818

now the two and three-wheeled velocipedes started upon their respective careers in earnest, for cycling had at last become a fad.

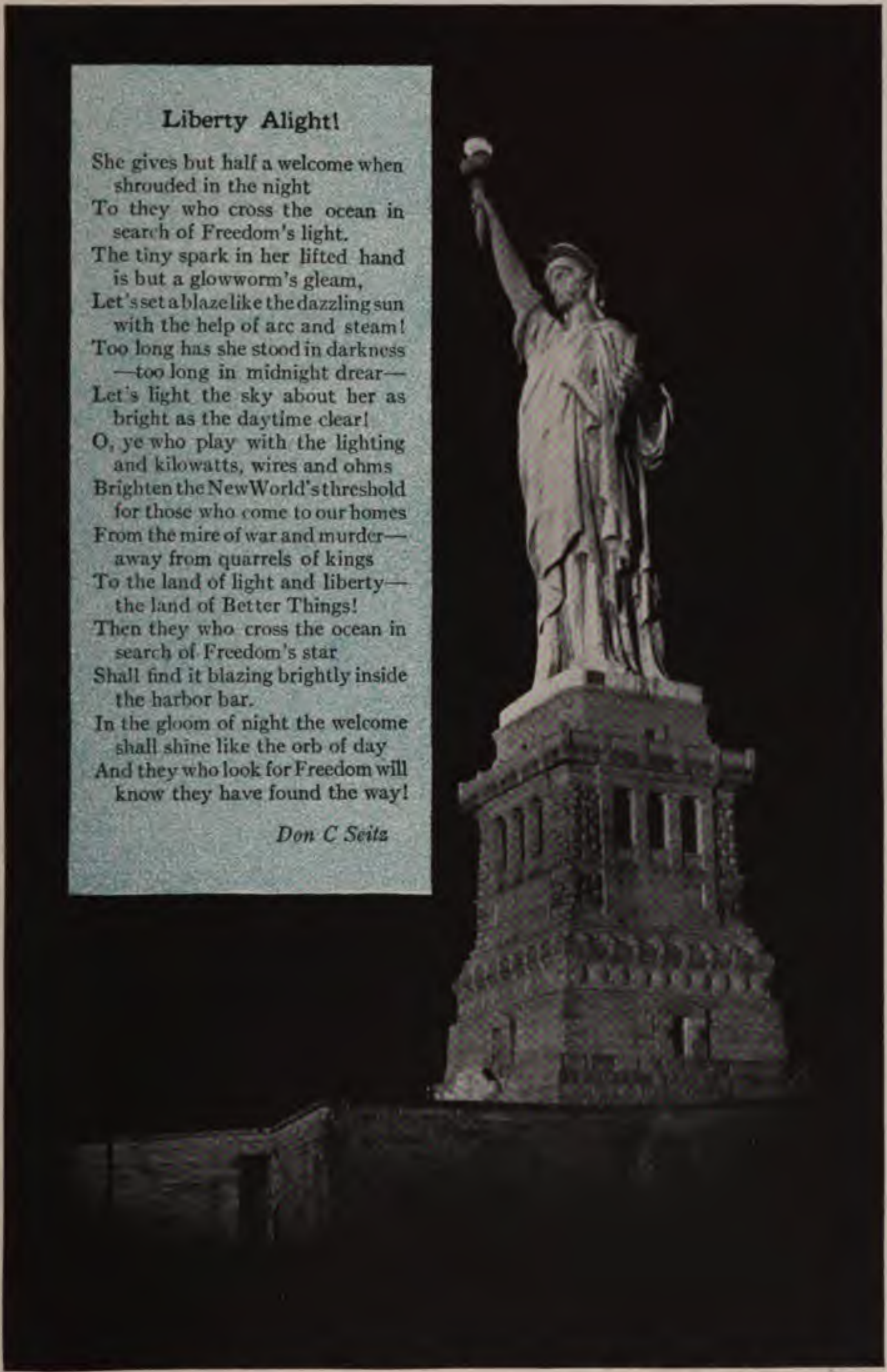
Riding schools were established; books of instruction in "the new art of cycling" were published, and here in New York, before the end of that year, enthusiastic devotees of the pastime were numbered by the thousand. Many will recall the rapid developments which followed: the iron-stiffened frames of the seventies, the introduction of the wonderful high-wheel Pope in '78, the perfected "Ordinary" with its hollow forks and ball bearings in '82, the eccentric "Star" with its diminutive front wheel, a more than seven days' wonder, in the eighties; the early cushion-tire Columbia of '89, and then the "Safety," destined to outlast them all. The "Safety" appeared in the late eighties and reached its perfection in the chainless of 1896, but, as every one knows, its triumph was short-lived, for then came the motor cycle with its tremendous speed.

Early Wheel Chairs

Meantime, collateral developments, which are more to our purpose, the three and four-wheeled machines, chiefly of English type, had continued and in 1882 the tricycle came into favor. It was made in a variety of forms, sometimes with the steering wheel in front and sometimes behind, with seats for one or for two persons. Then, in 1890, appeared the "Coventry Chair," a wicker-bodied, chair-seated tricycle, built for two, and steered by means of a bar running beneath the body to the front wheel. This seems to have been the nearest approach to the form of the motor chair that was made in the days before the application of the motor to the bicycle and tricycle.

There is room—though not in these pages—for speculation regarding the future of the motor chair, which may, indeed, be the forerunner of small electric vehicles designed to provide for the many to whom the motor cycle does not appeal, and for whom the cost of the automobile is still prohibitive, a pleasant mode of recreation and a comfortable means of going to and from business. The place occupied by the ever-ready bicycle and tricycle of other days remains, after two decades, unfilled by the powerful road machines of the present—and the place is a large one. Whatever the future may bring forth, convenience and simplicity of operation will no doubt be the leading requirements.

And, judged by these standards, the "Electriquette" will be eminently successful within its own field. Hours of instruction, days of practice, and, first or last, the acquisition of mechanical skill, are not needed for the manipulation of its mechanism. The chair is steered easily with the right hand by means of a horizontal transverse lever. The controller, which gives two speeds forward and one reverse, and which is said to be absolutely "trouble-proof," is operated with the left hand. In the handle of the controller is a push-button for the warning electric bell while the brake is worked and the car brought to an abrupt stop by a reversal of the control lever. The battery is capable of operating the vehicle for five to seven hours without recharging.



Liberty Alight!

She gives but half a welcome when shrouded in the night
To they who cross the ocean in search of Freedom's light.
The tiny spark in her lifted hand is but a glowworm's gleam,
Let's set a blaze like the dazzling sun with the help of arc and steam!
Too long has she stood in darkness—too long in midnight drear—
Let's light the sky about her as bright as the daytime clear!
O, ye who play with the lighting and kilowatts, wires and ohms
Brighten the New World's threshold for those who come to our homes
From the mire of war and murder—away from quarrels of kings
To the land of light and liberty—the land of Better Things!
Then they who cross the ocean in search of Freedom's star
Shall find it blazing brightly inside the harbor bar.
In the gloom of night the welcome shall shine like the orb of day
And they who look for Freedom will know they have found the way!

Don C Seitz

The Statue of Liberty as Illuminated Recently by the Searchlights of the Battleship Michigan under the Auspices of the *New York World*

Manufacturers and Agents (Continued)

Heating and Cooking (Concluded)

Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Motors

General Uses

Allis Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Mad Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building, Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St

Refrigeration

Automatic Refrigerating Co—30 Church St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Mad Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—1790 Broadway
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Snow & Co—440 West 46th St
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—256 West 55th St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl, 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 B'way
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—30 E 42d St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co(Sturtevant)—101 Park Ave
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James—119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co(The Eden)—39 E 42d St
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden) 119 W 42d St
Hart Wallace B—(Arora)(Judd)(1900) Cadillac—46 E 41st St
Home Devices Corp(Modern)-Bush Term Bklyn
Hurley Machine Co—147-157 W 42nd St
Kandem Electric Co Inc—49 E 21st St
National Sewing Machine Co—290 Broadway
Sibley Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Construction Company
Broadway 1170—Alliance Electric Co Inc
Broadway 1402—Gagen & Butler
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 444—Russell & Co
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Fifth Ave 75—H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Electric Company
West Broadway 578—MacNutt & Strinert
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Electric Contracting Company
West 17th St 143—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Elec Construction Co
West 31st St 109—Jandous Electric Equipment Company Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—New York Electric Installation Company
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Manufacturing Company

Foundries and Forge Shops

Service	Required H P
Casting rattlers	1 to 10
Casting grinders	3 to 5
Root blowers No ¼	5
Root blowers No ½	5
Root blowers No ½	6
Root blowers, No 1, cupola, 1.5 tons per hour	7
Root blowers, No 2, cupola, 2.5 tons per hour	10
Root blowers, No 3, cupola, 3.5 tons per hour	15
Root blowers, No 4, cupola, 5.5 tons per hour	20
Root blowers, No 5, cupola, 9 tons per hour	35
Root blowers, No 6, cupola, 13 tons per hour	45
Root blowers, No 7, cupola, 18 tons per hour	60
Root blowers, No. 8, cupola, 24 tons per hour	80
Root blowers, No 9, cupola, 35 tons per hour	100
Williams & White No 7 bulldozer	30
Ajax No 2 bolt forging machine	10
Williams & White taper rolls for break-shoe keys	15
Williams & White 2 in bar shear	7.5
Bulldozers, 29 by 14 in	5
Bulldozers, 39 by 16 in	10
Bulldozers, 60 by 20 in	20
Bolt cutters, 1 in	1
Bolt cutters, 2 in	2
Bolt cutters, 3 in	3

Service	Required H P
Bolt cutters, 4 in	5
Bolt forging machines, 0.5 in	3
Bolt forging machines, 1 in	5
Bolt forging machines, 1.5 in	7.5
Bolt forging machines, 2 in	12
Shears, 42 in wide, cutting ⅛ in iron	3
Shears, 42 in wide, cutting ¼ in iron	5
Shears, 50 in wide, cutting ⅛ in iron	4
Shears, 50 in wide, cutting ¼ in iron	7.5
Shears, 96 in wide, cutting ⅛ in iron	5
Shears, 96 in wide, cutting ¼ in iron	10
Shears, ¼ in steel	1 to 3
Shears, ¾ in steel	7.5
Shears, 1 in steel	10
12 in horizontal shear	20
3 by 3 angle shear	5
8 by 8 angle shear	10
12 ft gate shear	30
Coping machine, 24 in beam	7.5
Rotary column planer, 48 in	10
Plate-bending roll	3 to 50
Cleveland straightening machine, 15 in I-beams	5
Large straightening machine, 24 in I-beams	15
40 in beam saw, sawing cold 24 in I-beam 2,500 revolutions per minute	75
Slow speed cold saw	5
Universal punch	10
Bradley cushion hammers	2 to 5
Drop hammers	2 to 15
10 in John's beam shear	10
Bolt machine	7.5
Rivet machine	7.5

Manufacturers and Agents

Arc Lamps

Cooper Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Bklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Smith-Eldridge Co Agents)—39 Cortlandt St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Motors Truck Co—246 W 59th St (C)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey St Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent)—236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—1838 Broadway (C & P)
Waverley Co The (Poertner Motor Car Co Agents)—1759 Broadway (C & P)

Manufacturers and Agents (Continued)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Northwestern Electric Co The—1457–63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Edison Thomas A Inc—141 Lakeside Avenue Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Mfg Co—165 B'way

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204–206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—527 W 23d St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42d St
Phila Storage Battery Co—American Building B'way and 58th St
Storage Battery Supply Co—239 East 27th St
United States Light & Heat Co—16–24 W 61st St
Willard Storage Bat Co The—228–30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303–305 Fifth Avenue
Hospital Supply Co The—53-55 5th Ave
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Av
Kny-Scheerer Co The—404–410 West 27th St
MacAlaster Wiggin Co—66 Bway Cambridge Mass
Meyrowitz Mfg Co—31st St and 1st Ave
Metropolitan Eng Co—30 E 42d St
Neel-Armstrong Co—2017 Fifth Ave
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 8th Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—5th Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St, 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 East 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 West 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 Broadway
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 West Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62–64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417–421 Canal St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—1790 Broadway
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St
Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—1790 Broadway
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
H W Johns-Manville Co—Madison Ave & 41st St
Kandem Electric Co Inc—49 E 21st St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 Broadway

Globes—Reflectors

Dealing William—1 Hudson St.
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42nd St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Johns-Manville Co H W—Mad Ave & 41st St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn, N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—1790 Broadway
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialties Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St
Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Spring 9890
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
*124 W 42d St	Bryant 5262
*151 East 86th St	Lenox 7780
*27 East 125th St	Harlem 4020
*362 East 149th St	Melrose 9900

*Open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts west of the Bowery and south of Catherine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street east of and including the Bowery, and north of and including Catherine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

511 East 19th Street

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N F Brady, President
Joseph Williams, Treasurer
Lewis B Gawtry, Secretary

Admittedly the great problems of merchandizing in New York are the handling of freight at railroad and steamship termini and the trucking of goods through the city. It is here that a great item of overhead expense is added, an item which, while practically unproductive, adds considerably to the ultimate selling price.

Just how great a burden this cost of handling and trucking is destined to be will be determined largely by the extent to which shippers avail themselves of development in more efficient methods of freight handling.

While for many years the slow methods of the 'longshoreman have prevailed, it is gratifying to observe a change which is affecting every phase of handling goods in bulk. For instance, the hand truck is being displaced by a motor vehicle which does the work of six men in less than the time required by one; a motor hoist is taking the place of the familiar horse-operated block and tackle which requires the better part of a day for unloading a barge; a portable conveyor of the endless belt type shifts a carload of meal sacks to any place or any height, whereas in former days a gang of laborers did coolie work in carrying the burdens on their backs. Even loading goods from the ground, work once done by shovelers, is now done more efficiently by a machine, while a mechanical lumber stacker has more than doubled the height to which planks may be piled. The list of such changes is of almost indefinite length. Mention any task formerly done by hand or by brute strength, and it is almost certain that somewhere in the catalogue of mechanical devices will be found an appliance that will turn out a better piece of work.

It has been estimated that $150,000,000 is spent annually in handling New York's $350,000,000 worth of food stuff at the freight stations and for delivery in the city. The development of better methods should result in a material reduction of this staggering sum. Such methods are at hand; it remains for those who are directing this important phase of metropolitan life to avail themselves of the opportunity presented.

⁂

One hundred and forty thousand men marched in New York's preparedness parade in May. Some half a million have participated in similar demonstrations in other cities. In the ranks were office boys, junior clerks, managers and executive heads. Industrial corporations of national importance and small business interests were represented.

As was inevitable, there was speculation as to just how deep-rooted was this spirit of patriotism. How many would keep on if a mobilization camp lay just a little further up the avenue, was a question that found more or less frequent expression.

The answer is seen in the response to the President's call upon the

National Guard. Members mobilized at their armories and recruits joined—a hundred a day for almost every regiment. The rank and file—and they had all marched in the preparedness parade—answered the call. But of greater significance was the action of the employing bodies. They too had marched in the parade and they showed their spirit by an almost unanimous decision to hold positions open, and in many cases to continue pay for all employees who were called out.

In this, the first test, there is ample evidence that the brave showing of patriotism was no vainglorious demonstration, but a true indication of the courage and loyalty of Americans of every rank.

◆

A traveler returned from the South reports a pleasing and picturesque evidence of the march of electrical progress. The instance related to a little town in the pine-barrens of Georgia, boasting 400 inhabitants, and entirely guiltless of anything that might be included under the head of modern conveniences. The sole industry of the place is a saw-mill, and except for the steam engine there, the people live exactly as their grandfathers did before them.

But new ideas have entered the pine-barrens. The owners of the saw-mill have decided that the same plant that works for them by day can produce current for lighting by night. Accordingly, dynamos are to be installed and electric lighting will be available after working hours. Besides this, a still more daring innovation is to be tried. One day a week is devoted to clearing out the saw-mill and to cleaning and repairing the machinery. On this occasion the generating plant will be kept running and the women of the town will be provided with current for ironing by electricity.

Instances like these, unimportant as they are in themselves, all go to show the passing of electricity as a luxury and its acceptance as one of the necessities of life. Further evidence of this is the increasing number of small consumers. Spokane, Washington, gives word of more than 7,000 contracts recently signed for installations averaging seven lamps apiece. The lighting company in Pittsburgh wired nearly 900 workingmen's homes during 1915, the time of payment extending over twelve months. Somewhat different is a "campaign" lately managed in Kansas City, where two outlets, one lamp and one flatiron, were offered at special inducements. In Meadville, Pennsylvania, with only 12,000 inhabitants, there has just been completed the wiring of fifty-five small houses, while in Hornell, New York, typical six-room dwellings are being wired as a result of a house-wiring campaign.

Facts like these are common knowledge to the electrical industry, and presumably to the majority of property holders in New York. Yet only the other day the editor met a wealthy owner of "old-fashioned" apartments who either believed or affected to believe that it would cost more than a hundred dollars to wire an ordinary seven-room flat, and that, furthermore, it would be necessary in making the installation to tear down the plaster. It took a contractor's statement to convince him to the contrary.

Drawing by Vernon Howe Bailey

A Page from the Half-Forgotten Chronicles of Greenwich By-Ways

Greenwich Village

An Appreciation

IN the face of all that has been said of achievement as the index of modern life it is refreshing to note here in New York City an environment in which effort and assertiveness figure but slimly. Greenwich Village is and always has been a picturesque distinction. The measure of this distinctiveness need only be observed in the community's sole requirement of adaptability. To blend, in the New York sense, is to wedge one's way, in fact or fancy, among the "successful." To succeed in Greenwich Village, from the day when one "lay in its fields and ate strawberries to satiety," has been to blend, simply and comprehendingly, with the ways of the neighborhood.

Not alone have people from long distances come and merged their lot among the villagers. New conveniences and luxuries translatable in terms of local utility have made themselves at home here in short order. One reads in the annals, and not without feeling, of the supplanting by street car of the John Street stage and its veteran skipper. The demolishment of Governor Jay's State Prison at the foot of Tenth Street and the subsequent erection of the present brewery was likewise, it seems, approved by local option. More recent, though not of yesterday, electricity appeared and with characteristic concern set about adapting itself to the vicinity. In the success of this novelty, more perhaps than of any other, the Greenwich spirit looks out unerringly. Electric light was welcomed, not because it was new, not because it was popular, but because it was likeable. This readiness with which it entered upon the formula of life in ordinary is of credit to all agencies concerned.

The fact is peculiarly of interest in view of the simple naturalness marking the development of the quarter. From the coming of Sir Peter Warren and his sea-gotten affluence in the 1730's, the village expanded leisurely to its present status. The Warren estate of three hundred acres, laid out in the English fashion, passed to his three daughters. The house, set on an eminence near the river, was afterwards sold twice and remained intact until 1865, when it gave way to the rising tide of brick and mortar. In the partitioning of the estate into small holdings, roads were cut through bearing the names of the daughters Warren and the remote resemblance to city regularity conspicuous in the streets that followed.

Abingdon Square

The name of Lady Abingdon alone survives in the delightful triangle of grass and hedges known today as Abingdon Square. If what has just been said of electricity had no other warrant, the presence of the innovation in and about this smiling area would suffice. Tall posts supporting the latest in street lamps mark the respective corners. Close by, under the dome of an imposing pavilion suggestive of brass bands and holiday cheer, a great globe of white glances its rays over the complacent landmarks round about it, while a hundred windows and antique doorways and the colored glass of old-time inns contribute in turn a modernness of illumination to which the park's charming patron must needs have as charmingly subscribed.

It was in Sir Peter's time that Greenwich grew fashionable. Parties at the new country houses became the thing; and along the road thither, the preferred drive for city folk, appeared numerous taverns called forth by the inspiring thirst of that generation.

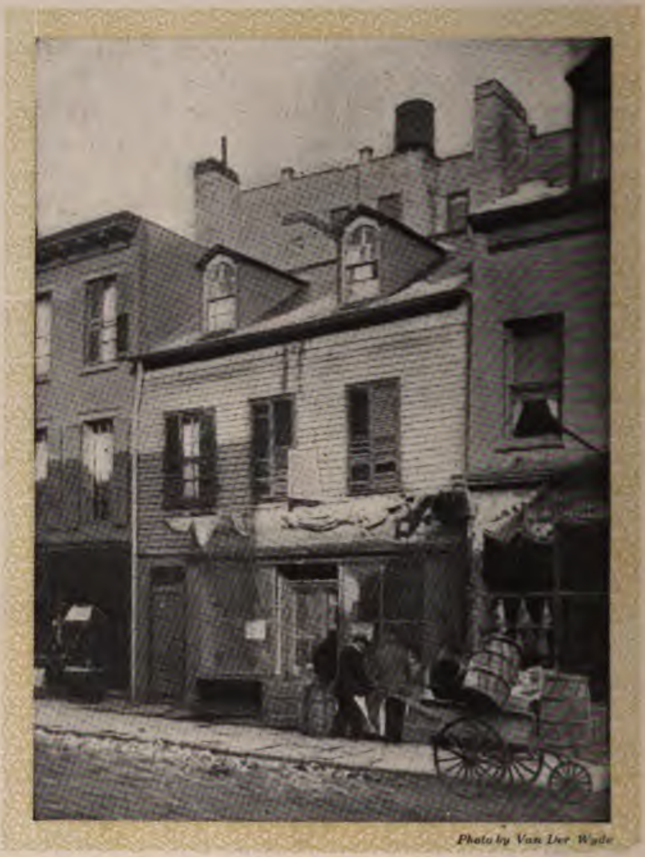


Photo by Van Der Weyde

Where Thomas Paine Lived Just Prior to His Death in 1809

The Revolution wrought few changes in the village. Richmond Hill, set in the centre of what is now Charlton Street, was used by Washington for a time and later by Adams. Burr afterwards bought the estate and added extensive adornments, particularly a fine gateway at the entrance, now the terminal of Macdougal Street. After serving as a theatre and at last a road house, the mansion was finally torn down. The prison has already been referred to. A hotel put up hard by bespoke true Greenwich democracy in its opening announcement, "A few gentlemen may be accommodated with board and lodgings at this pleasant and healthful situation a few doors from the State Prison." Scorning the ambiguous stage coach, the village boys and girls trudged to school where the Mutual Life Building now stands. The Greenwich Market, the first of its kind, was started in Brannon Street in 1800. The conservatism in prices, still reigning thereabouts, suggests, though dimly perhaps, the market's supply of the prison's two hundred and fifty-five inmates with three meals a day for $10.11.

Yet Greenwich has had its prosperous times. Routed by yellow fever in 1822, much of the city, including the Post Office, the banks, the Custom House, and the insurance offices, fled hither in a memorable Hegira. Such an exodus, needless to say, converted the village into a well-defined suburb, though the excitement was but momentary. In 1830, New York University established here, and in the white freestone structure on Washington Square East, now vanished, Morse perfected the electric magnetic telegraph.

Photo by Van Der Wyde

Far from the Depressing Drolleries of Middle-Class Convention

Of late, while the village has changed little, philanthropy has ensconced itself in the community house. The Judson Memorial Buildings on Washington Square South are familiar to most and appear, for all their up-to-dateness in lighting and power service, to have blended themselves with their surroundings. Varick House, a new boarding institution for girls in Dominick Street, has already, through its liberal use of electric equipment, warranted extensive mention in these pages. The remodeling of run-to-seed properties for studio purposes is proceeding at a surprising rate. The Greenwich villager, even of the artist type, would seem to demand no little convenience along with his "atmosphere." A climax is reached at 15 Washington Square North, an august mansion that has embraced, warmly and in good faith, an entire electric heating system.

In truth the past, the present, and somewhat of the future are found rubbing shoulders in Greenwich Village with whole-souled cordiality.

Standing in the brilliance of a tall Type "C" corner light, an old villager may recall the times antedating either gas or electricity when the lamp man came with the dusk and climbed the posts to light the dim oil lamps. Those presumably were the days when the spectacle of a pig and dog fight about the streets was not unusual and when village pumps proved sources not only of hard water but of gossipings and flirtations that found further expression in Love Lane, now prosaic Twenty-first Street. Then too, where Hudson Park now boasts its concrete and playgrounds, reposed old St John's graveyard, its bending willows flecking the sunbeams over crumbling stones distinct with Dutch and English names of repute in the days of colonial conflict.

One wanders about admiring the fine wrought-iron work of a railing, the quaint newel of a mansion, a basement arch open upon a sunny court, brass knobs and white doorways, or a window-box filled with red geraniums whose fire, against the mellow of old brick, breathes a welcome unknown to the smugness of marble or brownstone.

That such greetings will continue indefinitely seems likely to one familiar with the Village. And this is not because Greenwich is unchanging. Rather it is due to the fact that men and things, coming and abiding here, themselves change to the type of their environment. Electricity is no exception. The lamps of Macdougal Alley and the Square dream apart from the loud lustre of the Avenue, and new conveniences in the homes of the quarter accentuate but do not alter the abounding charm of life for those who dwell here.

Photo by Van Der Wyde

The Edison Monthly takes the Photographer's Word that this is Greenwich and not the Latin Quarter

Lighting Fixtures "At Home"

IMAGINATION in the choosing of house lamps is one of a number of things often and distressingly absent. Many the care-taking selection good in itself that, once installed, has quarreled with everything within quarreling distance; and many the attempt on the part of exhibitors to meet this condition in the display of their productions.

No one, perhaps, has been more successful in this regard than Cassidy & Sons, as established at present in the Architects' Building at 101 Park Avenue. The idea adopted is the showing of fixtures in their natural surroundings. In other words, the five thousand feet occupied have been divided up and furnished on the plan of a finely appointed home.

A Colonial Porch Effect

Approached at the rear of the impressive building foyer, this Cassidy "House Beautiful" presents an entrance porch of the Colonial epoch with white fluted pilasters, inevitable knocker, and over the door the typical old-time lunette of leaded glass. Just within, a miniature entrance hall, white walled and paved with weathered tiles, anticipates again the charm of the establishment.

Admitted by a butler in livery the caller discovers an American hallway of the seventeen hundreds. Here at either hand simple arches open upon the rooms adjoining while before rises the severe staircase of those days. In the stair well a grandfather clock poses solemnly whose quarter-hour chimes toll long and often before the visitor feels moved to leave. While somewhat will be said in a moment on lamps in general, note must be taken here of a Colonial lantern of black tin showing six panels of crystal, deeply cut. Meeting at the base, iron rods support still the old candle socket. A small carbon bulb of ground glass provides light strongly suggestive if not identical with genuine, old tallow-candle light.

On turning to a reception room at the left one finds himself in an interior quiet and agreeable in appointment and displaying from ceiling and side-walls numbers of suitable sconce and chandelier forms. Here, as in every room but one, the walls are canvas covered and painted a neutral tint that, with white woodwork, affords an admirable background for displays of varied coloring. Without yielding to the lure of fathomless upholstery, the caller proceeds to an

Photographic Bureau of The New York Edison Company

Fixtures in Great Variety Show the Many Possible Forms of Dining Room Lighting

adjoining drawing room displaying the Adam spirit. Simple in treatment, this room presents against walls of light gray a fine mantel of the epoch with a three-panel mirror of late Adam, a console of pleasing proportions, a stand or two with an odd vase or candlestick, and chairs of the approximate period. Especially happy is the selection of lighting fixtures. Indeed, if one is in search of that rare embodiment, successful simplicity, he could not do better than profit by examples hanging from this ceiling.

Photographic Bureau of The New York Edison Company

The Library, Walled in Oak, is Rich in Paintings and Upholsterings

In the library communicating at the right, the decorator, Hiram P Frear, has produced in a small space that feeling of liberal richness and expansive dignity supposedly met with only in libraries of the traditional dimensions. Paneled to the ceiling in dark oak, the room with its Italian mantel of white marble, paintings, statuettes, and lamps and hangings of warm color, issues perhaps the most compelling invitation of the entire house.

Passing a living room of fine Georgian suggestion, the visitor enters the dining room, an interior well equipped in fixtures of every appropriate type. Moreover, not one but many of these designs in nickel and glass appeal quite as forcibly to the pocketbook as to the taste. The room derives no small charm from glimpses caught through French windows of an enclosed Pompeian porch or terrace at the rear.

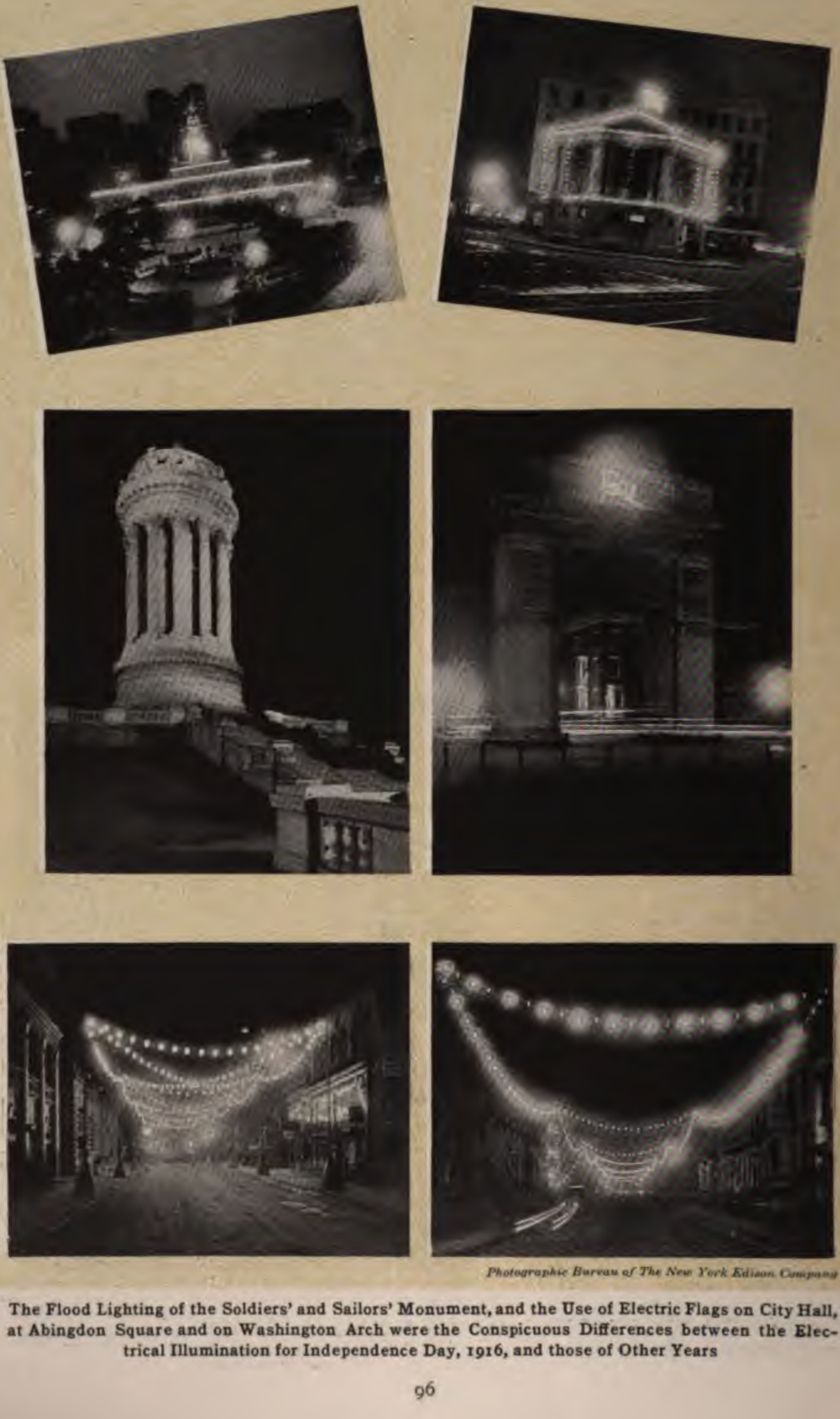
A similar glimpse is enjoyed from the grand drawing room, which is backed by an Italian conservatory in white marble. While drawing room walls would naturally display brackets from the Trianon Palaces, a showroom boasting tapestry from the looms of Aubusson must be conceded a delightful curiosity. Such, however, is this privileged interior that with its vases, well-placed bronzes, and the wealth of chandelier and bracket creations framed against its panels, it produces in the daily public a sense of being quite as privileged.

To attempt to do justice to the endless variety of designs and finishes introduced by Cassidy & Son would, under the circumstances, be out of the question. Among what may be termed specialties is a worthy revival of American Colonial motifs, notably in cut crystal. These resurrections of "whale-oil days" appear not only in the guise of table and hall lamps. Ambitious chandeliers have been worked out on these lines, rich in globes and in a multitude of pendant prisms suggesting what might have been if the graceful period in question had been electrically favored. Of near relationship, survivals of the old-time hurricane candle shades present themselves amid associations dreamed of only by the simple folk whose draughty chambers demanded these precautions.

Note also should be made of remarkable headway attained by this concern in the adapting of white enamel to artistic use. On the floor above several instances of this white work show with telling effect. A development of much interest is pointed out in lamps of gray iron and antique gold. It is more than likely, however, that the Cassidy work shops have since invented or resurrected something not only worth seeing but worth adding to the attractiveness of the most attractive of homes.

Photographic Bureau of The New York Edison Company

A Colonial Hall Lighted Appropriately by a Few Choice Lamps of the Period



Photographic Bureau of The New York Edison Company

The Flood Lighting of the Soldiers' and Sailors' Monument, and the Use of Electric Flags on City Hall, at Abingdon Square and on Washington Arch were the Conspicuous Differences between the Electrical Illumination for Independence Day, 1916, and those of Other Years

Relieving Dock Congestion

FREIGHT handling, be it in warehouse, railroad terminal, or pier, is a problem which has been seriously complicated by the war in Europe. The huge shipments of all kinds which have made their way to the Atlantic seaboard, coupled with the shortage of ships, have caused congestion and confusion unequaled in the history of New York shipping. These unprecedented conditions are serving to emphasize the general lack of adequate freight handling equipment and the need of a better system in the transferring of merchandise in the bulk. Such a system, supplied by a great variety of electrical devices which have but recently been developed, is now coming into its own on the water front.

The stevedore and his methods of loading and unloading, packing and piling, by brute strength has been depended upon from time immemorial, for the negroes on the Southern levees and the mixed hordes which make a living on the Northern water fronts presented an always available means of moving freight. Few shippers stopped to consider that possibly hand work of this kind was the most expensive. Derricks and steam power, used chiefly for hoisting cargoes from the hold of ship or barge, lightened the labor, but did not dispense with man as the beast of burden.

The handling of finished products; the trucking and piling of sacks, cases, crates, bales, barrels and also of loose material, is an expense that produces nothing; it merely adds to cost without giving an adequate return in either quality of goods or reduced selling price. And it is this

Photographic Bureau of The New York Edison Company

Any Day, Any Hour, in West Street, where Tons of Incoming and Outgoing Freight are Carted from or Delivered to the Piers

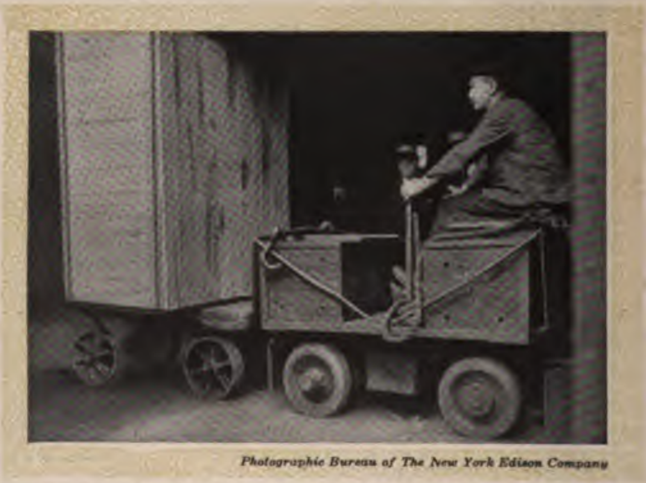
Photographic Bureau of The New York Edison Company

The Hand Truck of Years Ago Persists as a Contributing Factor to the Slow Movement of Freight

problem of non-productive labor that is being solved to a large extent by electrical apparatus.

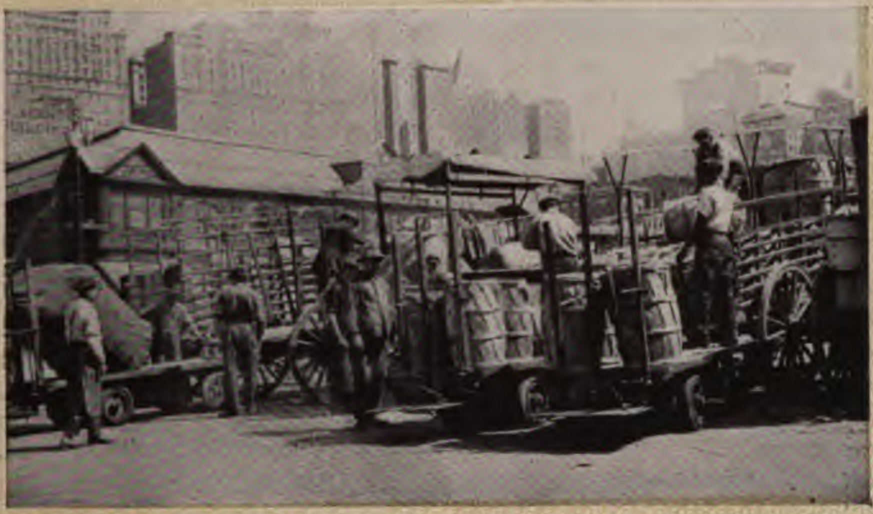
One of the most generally applicable of these electrical devices is a portable elevator, conveyor and unloader. This is constructed on the belt type conveyor principle and is built in sections, each section being a complete unit with self-contained motive power. The design is such as to allow its use under almost any conditions, the sections being made in varying lengths. The frame of the machine is constructed of wood or steel as the requirements may dictate and endless carriages continually move in the direction desired. The raising, or "piling," end of the outfit is connected by a steel cable on each side of the carrier to a device mounted on the frame by which the angle of lift is altered as conditions may require. The carriers themselves are designed to provide suitable support for almost any kind of package, bundle or crate. The outfit is on wheels, can be rolled from place to place and, by means of a flexible conductor the motor, which is mounted on the frame, may be attached to the nearest current outlet.

Another type of apparatus which has found widespread favor on the docks is the industrial electric truck. These staunch little vehicles, with a capacity of from two to three tons, are to be seen in swarms on many docks in New York City and vicinity, as



Photographic Bureau of The New York Edison Company

Speeding up the Handling of Bulky Packages with a Tractor that Both Pulls and Pushes



Photographic Bureau of The New York Edison Company

Electric Industrials Run out into West Street and Take their Loads Direct from the Trucks, thus Relieving, in Part, the Congestion on the Pier

well as at other crowded ports throughout the country. They are capable of a speed of about six miles an hour, loaded, and run continuously for nine or ten hours without recharging. Where long piers are necessary and the merchandise has to be carried from end to end they save untold time and relieve congestion to a wonderful degree.

Electric winches have also supplanted hand windlasses on many docks. The moment the ropes are thrown ashore they are given a turn around these winches and the motor draws the boat snugly into place. Equipment of this kind has also been installed on many ferry slips, where it raises and lowers the gangway in addition to performing other labors. Motor-driven winches have been placed where they can assist in pulling a heavy load up the incline of the gangway and have been found to be of inestimable service when extremely low tides have made the grade unusually steep.

Portable cranes, some working on a fixed rail system and others operating from movable trucks, have in many instances supplanted steam and hand hoists where speed and certainty of operation are the prime requisite. For handling heavy pieces of machinery or packages of great bulk these have proved indispensable, certain types having been developed which allow the man working the controls to carry them with him, hung from a belt around his neck, to points where he can observe all the operations. The high efficiency of such a device is readily appreciated when it is considered that with cranes and hoists of other types the operator is generally dependent upon the signals of others, as when lowering into the hold of a ship. With this electric hoist he can

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stand at the edge of the hatch and watch the progress of the load.

Electric coal handling apparatus is also in operation in several of the railroad yards and on the coal company docks. Bucket conveyors are most frequently used for this purpose and in addition electrically operated screens are occasionally found.

Electrically operated lumber pilers which stack planks to a height of fifty feet at a rate unheard of under the old hand methods are among the many other devices which have recently come into favor as time and labor savers. In fact there is electrical equipment to meet every need and to lighten every heavy task in the movement of commodities in package or in bulk. Their use is becoming more and more widespread throughout the United States and it is but a matter of a few years before the old methods will have disappeared.

No More Cranking

WITHOUT question the most popular musical instrument in the world, for the present at least, is the phonograph, for the reason that its potentialities are such as to appeal to all classes and all tastes. And now comes an invention that will still further popularize it.

Within the past decade, that is since the flat disc record instrument has become the accepted type, there have been two mechanical features in the operation of the talking machine which have been exceedingly objectionable; one the necessity of changing needles, and the other the bothersome business of turning a crank for each new selection. The first of these has largely been obviated and now every machine on the market is equipped either with a permanent or semi-permanent sound-reproducing point. The second, the matter of winding, has in the very latest models of the higher grade machines been eliminated by the use of an electric motor built as an integral part of the instrument. But such equipment was only to be found in very high-priced talking machines, nor could it be added to older machines which were already in use.

However, there have since been placed upon the market small, portable phonograph motors which operate a talking machine without the necessity or annoyance of winding up the spring. There are two types. The first is simply placed upon the cabinet, after the spring motor has run down, and a small friction wheel engages the edge of the turntable. A silken cord carries current to the motor from a convenient lamp socket.

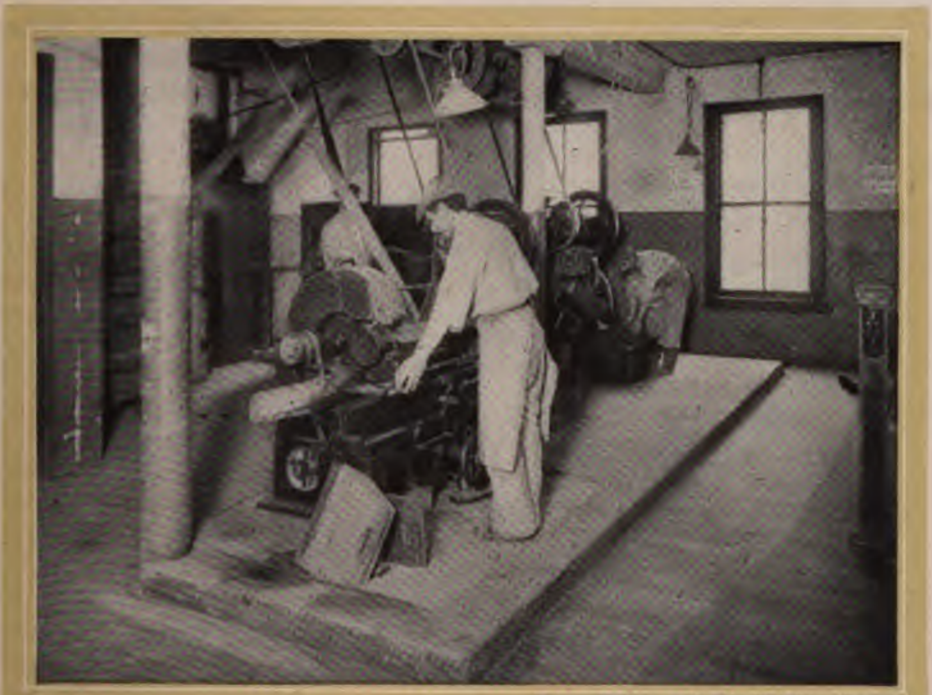
The motor itself is so small that the cover of the cabinet can be closed over it, while a switch conveniently located permits of stopping and starting without raising or lowering the lid. The other type is attached to the side of the cabinet, and instead of acting directly on the turntable, rewinds the spring after it has run down. The motor drive thus provided is absolutely silent and of a uniform speed, thereby giving a more accurate and pleasing tone reproduction. The number of revolutions which the turntable makes per minute is controlled, as ordinarily, by the speed regulator provided with the machine. With electric motor drive the slowing down of the machine while playing becomes impossible.

Motor Made Smokes

CROWDS of New Yorkers have been held, momentarily interested, before display windows watching a swarthy, fez-capped Oriental at his work of rolling cigarettes. This operation is interpreted by the curious as the method employed the world over in cigarette making. But the interpretation is as far behind the times as is the method itself.

Perhaps cigarettes are rolled by hand in the dark and smelly booths of Cairo and Alexandria, but the products of these cigarette makers, in spite of all that is said to the contrary, are inferior to the Oriental cigarette made right here in America. Both the method and the product are obsolete.

The modern version of this ancient industry has very little of the atmosphere of Turkey or Egypt about it, save of course the tobaccos used. The present-day motor-driven, cigarette-making machines (which turn out better work than the hand operators ever did), were invented and manufactured by Germans, and the operators of these machines are for the most part Greeks. This combination is now producing the best Oriental cigarettes on the market and producing them in prodigious quantities daily.



Photographic Bureau of The New York Edison Company

Tobacco that has been Cured, Sorted and Otherwise Prepared, is Shredded in these Powerful Motor-Driven Machines with the Aid of Edison Service

A good example of the modern cigarette factory is found in the five-story building at 214 West Forty-seventh Street, where the firm of M Melachrino & Company daily produces something like 2,000,000 cigarettes of the Melachrino and Nestor brands.

In this big factory, but a few doors removed from the brightest portion of the "White Way" and Longacre Square, many hundred pounds of tobacco from distant Macedonia, Smyrna and the Samsoun districts are being converted into millions of tiny, paper-wrapped and cork-tipped rolls. This tobacco arrives from the firm's warehouse in cloth-wound bales ranging in weight from thirty to 150 pounds. These bales are stored in the basement of the Forty-seventh Street building where motor-driven conditioning sprays are in constant operation keeping the air and the tobacco moist.

The basement is divided into two sections. In the first section the wrapped bales are stored until they are needed. As the factory consumes the supply on hand these bales are removed to the second portion of the basement, where they are unwrapped and the tobacco sorted on shelves. Here, too, the electric conditioning sprays are in operation. After a sojourn of two days in this room the bales are put into basket-like trucks and carried, via elevator, to the second floor of the building and the

Photographic Bureau of The New York Edison Company

Thousands of Dollars' Worth of Expensive Leaves are Stored Here Against the Time they are to be used in the Factory, Upstairs

Photographic Bureau of The New York Edison Company

These Cigarette-Making Machines, Invented by a German and Operated by Greeks, Produce more Cigarettes in One Week than the Most Skilled Oriental could Roll in a Year

separating room. Here the actual work of manufacture begins. In the Orient, where this tobacco is baled, the tiny yellow, gold and brown leaves are packed in layers and under so much pressure that it requires a special operation to separate them. This is done by hand and at the same time the tobaccos are blended according to the proportions prescribed by the experts of the Melachrino establishment. In the separating room is a long, high table flanked by benches. The top of the table is in the form of a trough while the bottom consists of an electrically operated conveyor belt.

Scores of Greek workmen sit along this table and with deft fingers separate the tobacco leaves. First they handle one kind and then another, dropping each leaf onto the passing belt. This belt carries the tobacco to a chute by means of which it is delivered to big basket trucks. As it is dropped into these baskets it is automatically mixed and made ready for the cutting room. However, it must first be conditioned by a two days' sojourn in the carriers. In fact all through the process of cigarette making it is necessary to permit periods of from twenty-four to forty-eight hours to elapse before proceeding with each succeeding step. This is in order that the degree of moisture may be uniform throughout the mass of tobacco.

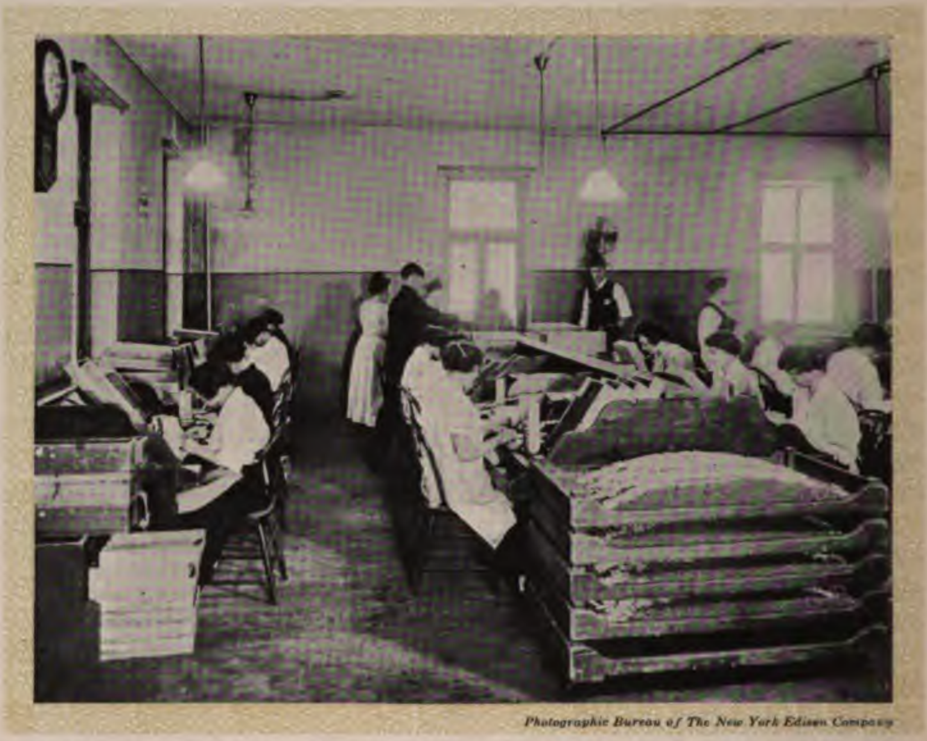
The cutting department is located in the front of the third floor of the building. Here two big tobacco cutters, operated by a seven and one-half horsepower motor on Edison Service, rumble along ceaselessly, shaving hundreds of pounds of tobacco into tiny flakes and getting it ready for the cigarette-making machines.

In fibre trucks this cut tobacco, in due time, is moved into the factory proper, where a battery of cigarette machines is operated. These motor-driven appliances are most ingeniously arranged. Their series of cogs, shuttles and belts perform any number of operations with lightning swiftness and a continuous stream of completed cigarettes emerges onto a belt conveyor ready to be counted, packed and shipped.

The tobacco is deposited in a hopper by the attendant of each machine.

Photographic Bureau of The New York Edison Company

Here a Battery of Peculiar Looking Machines is Devoted to the Task of Pasting Cork Tips on the Completed Product



Photographic Bureau of The New York Edison Company

The Final Stage in the Making of Cigarettes is Pictured Above. Here Scores of Girls Pack them into Boxes and Seal them with a Government Stamp

On the other side of the appliance is a roll of cigarette paper containing hundreds of yards of this light, gauzy material. On this side, too, is a printing outfit, with a pasting attachment.

The paper begins to unwind when the machine is started, first passing through the printing section where the name of the brand is printed in gold and blue, each imprint exactly a cigarette length away from the one preceding it. Duly printed, the paper slips smoothly along in a continuous strip until it reaches the mouth of the hopper, where tobacco is fed into it. A moment later the paper is wrapped about the tobacco and pasted fast. The strip then becomes one continuous cigarette, yards and yards long. As this big cigarette passes on its journey toward the front of the machine a sharp knife cuts it at intervals, each stroke snipping one completed cigarette from the apparently endless roll of paper and tobacco. Each of these machines can turn out 185,000 cigarettes a day.

On the floor above there are other machines which do cork tipping alone. They are ungainly looking, motor-driven affairs, but they work swiftly and accurately and with the help of their fair attendants they tip many thousand cigarettes a day.

From the factory the cigarettes are carried in great trays to the packing and shipping room, where a hundred or more nimble-fingered girls are kept busy making the product of the factory ready for presentation to the public.

Sawings

SAWS and sawyers have changed. The old saw has new teeth—the nicked flint of our antediluvian ancestors has long since given way to the toothed blade of tempered steel.

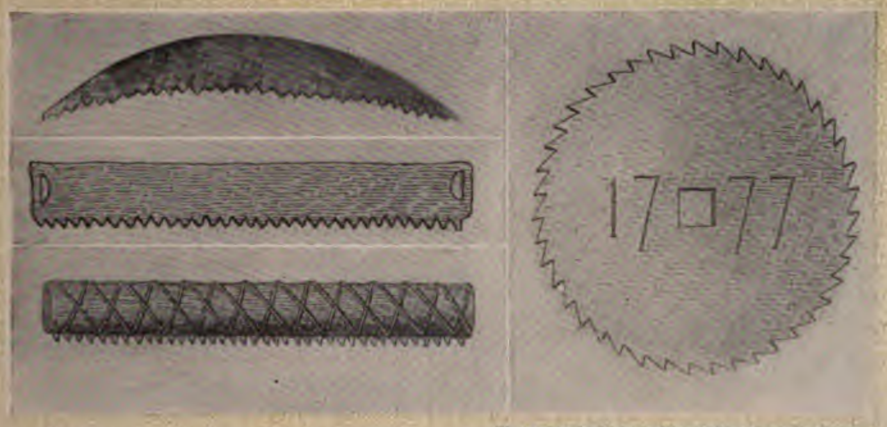
Closely paralleling the development of sawing instruments is progress in sawing methods. The first saw, a piece of stone with roughened edge, was worked slowly back and forth across the material to be cut. The modern saw is a narrow band of steel traveling at tremendous speed. Against the cutting edge of this logs are held by mechanical conveyors.

This band-saw is the direct descendant of the flint saw of the Stone Age. In the interim there have been saws of bronze, then the hand-saw of steel manipulated by two men, later the saw-mill operated by water-power, then the circular or buzz-saw of a century and a half ago and now the endless band-saw. The progress from the old methods to the new, however, has not been without its drawbacks. With the application of power there was introduced a great hazard—a hazard which claimed its toll before effective steps were taken to eliminate the danger.

A saw-mill of today, no matter how complete its mechanical installation, could lay no claim to up-to-dateness if it lacked proper safeguards for its workers. It is significant, however, that these unprotected saw-mills are in the great minority. Progress in the past century has left little room for antiquated practices.

Of the history of saws there are many interesting chapters:

Authentic records show that the hand-saw was known to the craftsmen of ancient Egypt and of Greece, but the origin of the appliance, in common



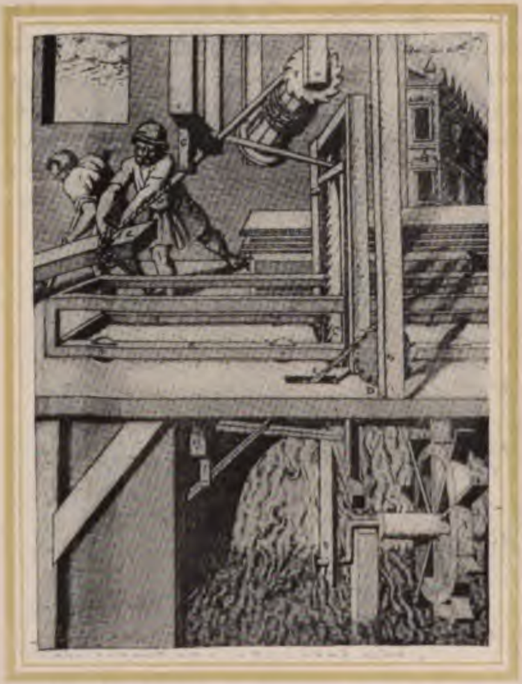
Illustrations by Courtesy Simonds Manufacturing Company

Some Primitive Saws. The Flint Saw of the Stone Age—A Relic of the Bronze Age—A Saw of Sharks' Teeth as made by South Sea Islanders, and the First Circular Saw

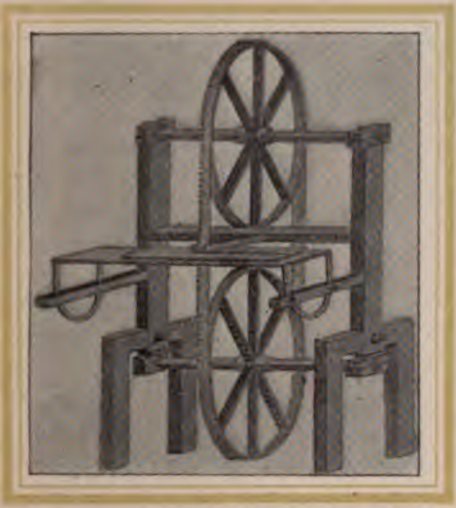
with most other tools that have been handed down to the present generation, is lost in the dimness of antiquity. The toothed pieces of flint that have been unearthed indicate that the men of the Stone Age used such an instrument, and its improvement during the following years is indicated by the bronze blades which have been found. The South Sea Islanders manipulated a saw made of sharks' teeth which by some native ingenuity they managed to fasten firmly enough in a straight row to serve their needs.

It is quite natural to believe that by the time the saw had reached the stage where it was fashioned of bronze it had also reached a point in contemporaneous industries where it was regarded as an absolute necessity. From that period begins the era of its greatest development. Following the use of bronze came iron, then steel, and with improvements in tempering steel came the various types of large saws.

For many years there was only one general type of saw—the hand-saw. Whatever was to be cut required the constant effort of the sawyer, sometimes two men. The first two-man saw consisted of a blade with cross pieces attached at either end to serve as handles. One man worked on top of the log, the other worked underneath, and pulling together, they managed to cut up their timber. Incidentally, they established the family of Sawyer on the earth, just as the Smiths had already been established. In spite of the application of power to other tasks this method prevailed for many years. It was not until the twelfth century that power was applied to log cutting, a small mill in France operating a saw in a vertical reciprocating motion by means of a water-wheel. For five hundred years England resisted the introduction of this time and labor-saving method. It is recorded that at the end of the seventeenth century there were more water-driven saw-mills in the New England colonies than there were in all England. The colonists apparently needed lumber in a hurry. The English sawyers resented the loss of their jobs, and as recently as the seventeenth century a mob, urged on by labor agitators, destroyed a



A Saw Mill of Medieval Times, operated by Water-Power



Band-Saw, more than One Hundred Years Old

mill in one of the suburbs of London.

Notwithstanding—the art of the top-sawyer is passing—the power-mill prevails.

The straight saw with its up and down stroke, its wide cut and its great waste of lumber has long since been discarded. Even the circular saw, hardly 150 years old, has been displaced. Now logs are cut into boards by the band-saw to the exclusion almost of every other type. The narrow ribbon of finely tempered steel, moving at tremendous speed, goes through the length of the log, making a fine cut with a minimum of waste.

It is not too much to say that every saw-mill in the country, even the small ones, is run by some form of power, while the newer establishments depend entirely on electricity. This last is perhaps the biggest and most recent step in the industry, for as recently as five years ago it would have been considered an extremely hazardous undertaking to equip a mill throughout with electric motors. Now the mill adopting other than electric power is the exception. It has been estimated that the saw-mills of Washington, Oregon and California, which cut about one-fifth of all the lumber that is produced in this country, have electrical installations of approximately a quarter-million horsepower.

Mention has been made of the danger element. To understand the menace of band-saws, one must picture this ribbon of steel revolving perpendicularly at high speed over two wheels, one of which is close to the ceiling. There are two great elements of danger, the cutting edge itself, and the liability of the bands to snap and fly off the wheels. In removing the hazard, this band with its wheels is now housed in a wire or

An Old New England Saw-Mill

Egyptian Sawyers

frame guard, the only opening of which is at the point where the logs are fed through. Circular or buzz saws are protected by guards which cover the revolving teeth and are forced open against the tension of a spring when material is to be cut. The safeguarding of the saw-mill has included the safeguarding of its allied establishment, the planing mill. Protective devices are provided to guard against every cutting tool while systems of ventilation exhaust all wood dust from the atmosphere.

Yet the greatest single factor in reducing the risk in lumber handling has been the introduction of the individual motor for each machine, doing away with the elaborate installation of overhead shafting and its dangerous complement, the exposed revolving belt.

At one time the tragedy of the saw-mill was an almost daily occurrence. The industry ranked with the most hazardous. Now, thanks to the safety engineer and the electrician, the risk has been reduced.

The Lighting Art

THAT the art of lighting has advanced to a stage where its application is a matter of considerable importance is evidenced by the fact that in September the Illuminating Engineering Society, a society constituted for the purpose of disseminating knowledge of lighting, will hold jointly with the University of Pennsylvania a series of lectures on the subject of illuminating engineering.

The increasing importance of scientific illumination in the home, the church, the schoolroom, the auditorium, the factory and other places of business, and the growing recognition by the public of the hygienic, economic and æsthetic value of correct illumination, makes it essential that those whose interest is scientific, medical or commercial should have a greater knowledge of the subject, and explains the purpose of the lectures.

The Greek Method of Sawing

Lighting the Royalton

A SUGGESTION of electrical interest in the bachelor apartment hotel should of itself invite interest. Indeed the extent to which electricity reflects the preferences of such an establishment is rather more illuminating than would be looked for. Your New York bachelor of comfortable means is not grudging of home convenience. His adoption therefore of the best in apartment lighting reveals a worthy individualism appealing to the searcher after novel and engaging effects.

The Royalton, in West Forty-fourth Street, long known as the largest bachelor hotel in town, proves an excellent illustration. While its one hundred and thirty apartments vary in size considerably, it cannot be said that their electric fitting has received in any case undue notice. The lighting of the public areas would at once argue otherwise. In lobby and hallway semi-indirect bowls of ivory color blend pleasantly with the yellow marble of high wainscotings. In the three dining rooms adjoining, similar bowls hang, three in each instance, from stained glass ceiling domes around the base of which shine a succession of frosted incandescents. Halls on the upper floors are supplied at arched intervals with enclosed globes while circular wells, one at either end of the building and reaching to the roof, show four green-shaded bulbs extending into the opening at each level.

With utility thus emphasized, the dweller in suite X, for example, has set about and accomplished a series of artistic variations. Dominating his dining room, which in turn dominates the apartment, a generous inverted dome of Tiffany glass, supplemented by four small cups about the rim, sheds an illumination worthy a baronial banquet hall. However, as before indicated, scantiness is not the order. Flanking a dark Stuart sideboard and protruding here and there beyond picture and drapery, are wall brackets of appropriate pattern.

The living room possesses a curious treasure in an Oriental creation of bronze and jewel-set glass of blue and scarlet. Plentiful about the pedestal, these settings peer out between leaf designs on the standard, scatter themselves among the leaves of the canopy, and finally cling with abandon about the bronze caps of four hanging bulbs. Lights on, these omnipresent brilliants absorb and radiate in their respective colors, suggesting nothing observable west of Suez.

Unusual Chamber Lighting

A close second is discovered in a hanging lamp in the chamber. Indescribable at first glance, this lamp proves on investigation to be a globe of fifty conch-shells bound cleverly together with bronze beadings relieved at the angles by miniature roses of the metal. The effect of light through the pink of these conches is the most delicate and restful to be imagined. On a table close by a lamp springs in bronze sobriety from a monster asparagus stalk. Whether the designer had further in mind bright red asparagus berries cannot be certain. In no sense uncertain, red knobs of rough-faced glass shine out genially around the valance of the shade and again at the base of a crowning cupola.

The parlor adjoining, in addition to frequent wall brackets, displays a large standard lamp, the peer of those already noted. Ivy leaves on pedestal, stem, and shade constitute the chief motif. Bronze green flamingos pose in the foliage of the base and lights pendant about the rim of the shade are sheltered by long crystals of amber. A communicating balcony, glass enclosed and seasonable with wicker furniture and growing plants, is lighted by two antique Colonial lanterns to whose wrought-iron ribs cling the tendrils of vigorous honeysuckles.

Photographic Bureau of The New York Edison Company

The Royalton, since the First a Private Plant User, is now Served by The New York Edison Company

The electric candle-stick has been taken at its full decorative value, showing throughout the apartments not only on tables and stands but holding its own among the plaques and athletic trophies of the mantel top. In one den, recallable among many, monopolizing a tabouret a great bowl of Chinese bronze encrusted with dragons masquerades as a lamp and has appropriated to this end a brown shade of heavy silk. A manifest hybrid, a tall brass standard of India work is remembered as supporting a huge four-leaved globe of American make, a combination successful from every angle.

Aside from these examples of table-lamp embellishment, mention should be made of the quantity of reading lamps made use of in these apartments. That is to say, the plain, adjustable, green-shaded reading lamp is found invariably on a convenient stand at the bedside and more often than not in a comfortable corner or upon the desk of a well-planned bachelor library. Single rooms, too, have been made proportionately as attractive as the apartments.

However, Royalton dwellers are now doubly to be congratulated. To have an abundance of electrical conveniences is a fine thing. To have back of them an electrical supply as dependable as engineering skill will permit is finer still. The Royalton, despite its many excellences, has until lately remained skeptical regarding the service of the Central Station. That this prejudice has happily been removed adds a final argument to the desirability of residence in this unique establishment.

Photographic Bureau of The New York Edison Company

A Chamber enjoying, besides frequent Bracket Lights, a Strange yet Beautiful Hanging Fixture of Sea Shells

Photographic Bureau of The New York Edison Company

The Stand Lamp Appearing here is of Curiously Wrought Bronze with Lights Shaded by Beadings of Yellow

War Zone Electrical Salvage

IT is reported that much of the electrical machinery and apparatus removed from places ordered by the Russian Military authorities to be evacuated has been removed by wholly incompetent people. Many comparatively useless parts have been taken and essential parts left behind. To obviate such errors in future, should occasion demand, military engineers will be given charge of the work.

A very modern sugar refinery is under construction at Isabela, Occidental Negros, the Philippines. The mill, of a 1,000-ton capacity, will be driven electrically.

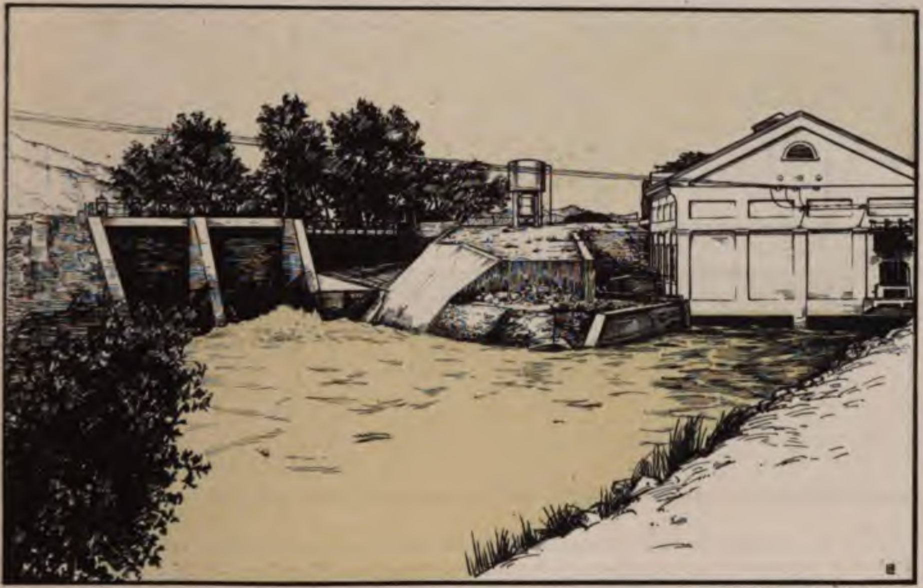
Watering the Desert

THE question of whether the United States shall by conquest acquire new territory, a question revived and agitated by the irresponsible with every threatened disturbance of international relations, suggests that the following facts should be made public, for it is an open secret that the United States has for more than a decade quietly and unostentatiously engaged, through the machinery of Government, in a well-defined and systematic policy of aggression upon a foreign power whereby an amount of territory, aggregating some 18,000 square miles, has been annexed and partially occupied. Within its borders settlements have been made, thriving towns have sprung up, and rural communities have been established, adjoining broad fertile fields and blossoming orchards, their constant communication with the life of larger centres insured by good roads and the civilizing agencies of trolley lines, rural delivery and telephones. There manufacturing and business organizations of many kinds wax and flourish, while social and educational activities promote the intellectual life of the people.

All this has been accomplished without conquest or purchase. The foreign power from which this now populous territory has been wrested is the hereditary foe of man, the reluctant, unyielding soil which conceals its potential life and richness under the barren waste of the sandy

Drawing by Edna Hood Lissak

Roosevelt Dam at Night. The Dam is 284 Feet in Height, 168 Feet Thick at the Base and its Length at the Top is 1,080 Feet



Drawing by Edna Hood Lissak

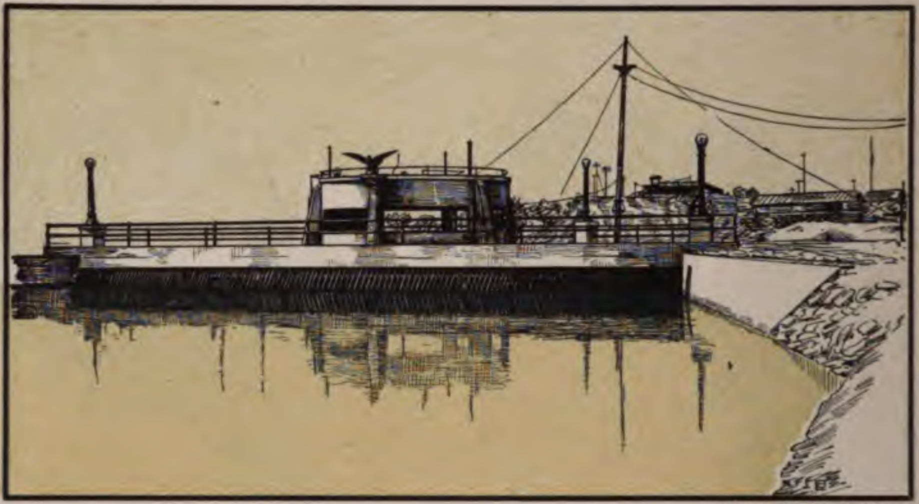
Power Drop and Power House on an Irrigation Canal in the Salt River Valley, Arizona

desert. The agents in this remarkable work of peaceful aggression that has made kinetic the potential resources of a vast region are the Government Reclamation Service and its now indispensable assistant, electrical irrigation.

It began in the year 1902 with the passage of the Reclamation Act, and so rapid has been the progress that "from a wilderness so unpromising that it evoked derision in the halls of Congress, the West has become today the land of fortune and opportunity." Vast areas, once arid and forbidding, whereon grew only the cactus and the sage-brush, now yield annually abundant crops of wheat and barley, rice, potatoes, alfalfa and fruits in their season of many kinds.

The lands, reclaimed by water and in large part by the use of electrical energy, lie in fourteen States, from Yuma, Arizona, in the south, to Williston, North Dakota, in the north. In the few years that have passed since the commencement of this undertaking four of the largest dams in the world have been built, hundreds of miles of roadway and thousands of miles of canals constructed. The great rivers of the West, the Columbia, Colorado, Yellowstone, Missouri, Great Salt River, the Rio Grande, held back by the giant Elephant-Butte dam, and many others, have been utilized as sources of power and irrigation in the development of a country whose resources, rendered available by scientific methods, are almost inexhaustible.

One of the largest of these Government enterprises is the Truckee-Carson project, which embraces more than 200,000 acres of irrigable land, located in several counties of western Nevada. Here, in a desert almost unvisited by rain, where sand and



Drawing by Edna Hood Lissak

Grand River Dam near Grand Junction, Colorado. This is an Unusual Type with a Roller Top Operated Electrically, Power being Generated at a Coal Mine about Six Miles away

volcanic ash are the predominating soils, are now raised annually luxuriant crops of grain, potatoes, celery, cantaloupes and other produce, which find a ready market in the mining towns of this section. The water for the irrigation of this extensive territory is derived from the Truckee and Carson rivers, which rise on the eastern slopes of the Sierras, and is conserved in Lake Tahoe and in the new Lahontan Reservoir, the latter one of the notable engineering feats of the West. Thence, by means of two canals and by numerous laterals and small ditches, the life-giving water is conveyed to multitudes of farms. In this and similar projects electricity plays an important part. At Lahontan the powerful gates of the huge reservoir are electrically operated, the hydro-electric plant supplying current for light, domestic uses and farm machinery to hundreds of homes in the region.

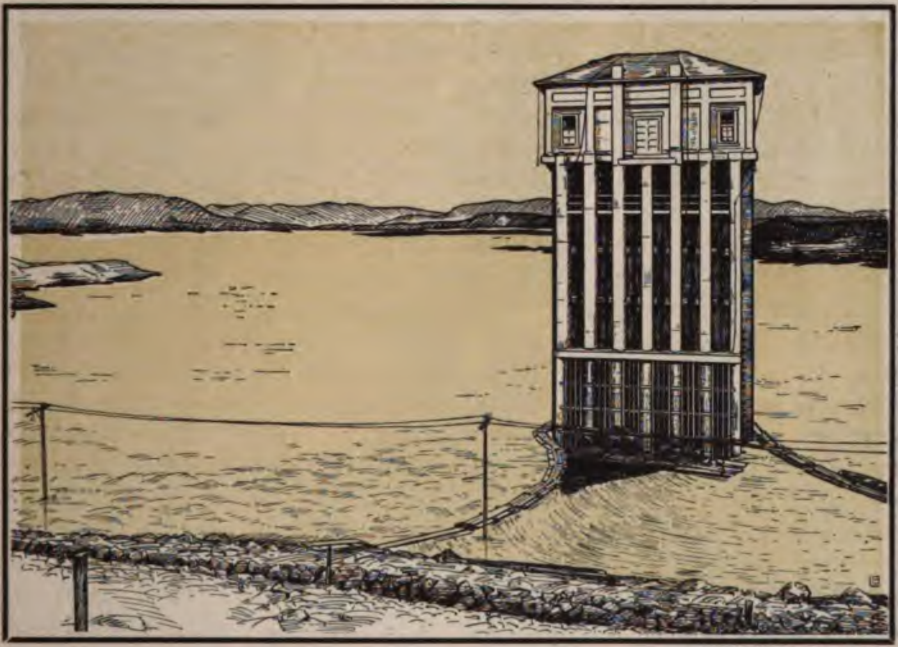
Far to the southwest lies another land, once desolate, now tropical with its wealth of vegetation, its magnificent palms and its almond trees, a land where dates and oranges, figs, lemons and olives grow in abundance, where the alfalfa yield from five or more cuttings a season averages from seven to ten tons per acre, and the cultivation of cereals, garden produce and Egyptian cotton are important industries.

It lies in the Salt River Valley, through which pass the Santa Fe and Southern Pacific railroads, connecting the many towns of the valley with the markets of the East and the Pacific Coast. One hundred and eighty-seven thousand acres have been rendered irrigable under this project, and in 1914 four thousand farms were supplied with water whose source is the great storage dam at Roosevelt, where sufficient water is retained to cover 1,377,600 acres to the depth of one foot.

The indispensability of electrical

power for pumping operations in irrigation has manifested itself in these and similar projects, instituted in recent years, for the character of the land is such that within the same system only a portion of the water can be made available for the ditches by means of gravity, and frequently it must happen that the lands to be irrigated are too high. The Minidoka project, Idaho, involves, for example, the irrigation of some 50,000 acres by means of a pumping system, the power being generated electrically in a plant located at a dam on the Snake River. In the Grand Valley of Colorado, also, a portion of the water supplied by the Grand River and impounded for irrigation purposes is distributed to the higher ground by means of electrically operated pumping plants, located on gravity canals.

But the economic significance of electrical power in these and other newly exploited portions of the West cannot be measured alone by the greatly increased value of the many thousands of acres now rendered productive through electrical irrigation. Its indirect benefits as a civilizing agency are in connecting and rendering populous and attractive hitherto isolated and primitive communities of the American deserts. Of this the Minidoka region, where electricity provides heat and light for the farm houses, and the city of Rupert has even set the example of providing its high school pupils with a building lighted and heated by electrical means, furnishes but a single example among many.



Drawing by Edna Hood Lissak

Electrically Operated Outlet Gates in the Lahontan Reservoir, Nevada. These Gates supply Water to Irrigation Canals in the Truckee-Carson Project. The Tower is nearly 150 Feet High

The Path of Light

My vagrant fancy follows in a dream
Beneath my softly-glowing chandelier
A narrow path, beginning in the gleam
Of candles, winking forth a homely cheer.

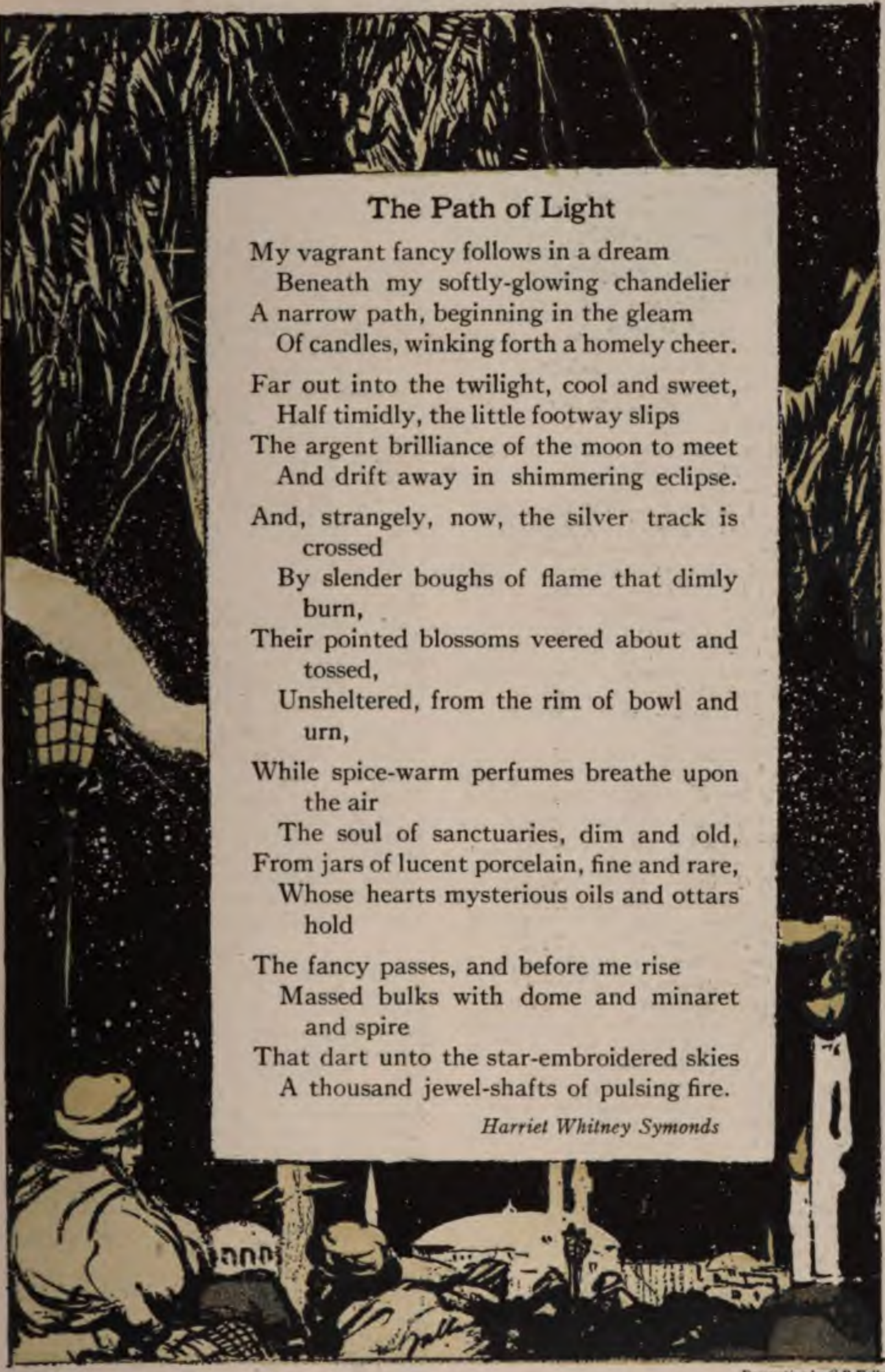
Far out into the twilight, cool and sweet,
Half timidly, the little footway slips
The argent brilliance of the moon to meet
And drift away in shimmering eclipse.

And, strangely, now, the silver track is crossed
By slender boughs of flame that dimly burn,
Their pointed blossoms veered about and tossed,
Unsheltered, from the rim of bowl and urn,

While spice-warm perfumes breathe upon the air
The soul of sanctuaries, dim and old,
From jars of lucent porcelain, fine and rare,
Whose hearts mysterious oils and ottars hold

The fancy passes, and before me rise
Massed bulks with dome and minaret and spire
That dart unto the star-embroidered skies
A thousand jewel-shafts of pulsing fire.

Harriet Whitney Symonds



Decoration by C B Falls

Manufacturers and Agents (Continued)

Heating and Cooking (Concluded)

Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Motors

General Uses

Allis Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co — Woolworth Building
"The Millionaire" Elec Cal Mach—1 Mad Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building, Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St

Refrigeration

Automatic Refrigerating Co—30 Church St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Mad Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—1790 Broadway
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Snow & Co—440 West 46th St
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—256 West 55th St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl, 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 B'way
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—30 E 42d St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Ave
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James—119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden) 119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cadillac—46 E 41st St
Home Devices Corp (Modern)—Bush Term Bklyn
Hurley Machine Co—147-157 W 42nd St
Kandem Electric Co Inc—49 E 21st St
National Sewing Machine Co—290 Broadway
Sibley Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Construction Company
Broadway 1170—Alliance Electric Co Inc
Broadway 1402—Gagen & Butler
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 444—Russell & Co
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Fifth Ave 75 —H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Electric Company
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Electric Contracting Company
West 17th St 143—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Electric Construction Company
West 31st St 109—Jandous Electric Equipment Company Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—New York Electric Installation Company
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Manufacturing Company

Electrical Requirements for Dock Handling Machinery

Elevators—Unloaders for Loose Material.

Capacity	Required H P
75–100 tons per hour	10
100–135 tons per hour	7.5 to 11

Portable Elevators for Loose Material.

⅓ to 1¼ tons per minute, self-propelling	2 to 7.5

Hay Material in Bags, Barrel.

500 lbs, lifting height 7 feet 9 inches	2
"A Ton a Minute" Lifting height 17 to 30 feet	2 to 5
1200-1500 lbs, lifting height 14 feet 6 inches	3

Portable Lumber Piling Machines.

30 foot pile, 18 inches wide by 4 inches thick and 8 to 24 feet long	3
40 foot pile	5
300 lbs to 22 tons	1.5 to 75

Electric Hoist, Electric Trolleys, Monorails.

1-10 ton, 3 horsepower hoists, 1½ to 7½ trolley horsepower.

Winches.	Required H P
815 lbs to 10 tons	5 to 20

Vertical Sand and Gravel Elevators.

Capacity in tons per hour, speed 200 feet per minute.

	0 to 40 foot center	40 to 80 foot center
10	0.92	1.7
20	1.5–1.75	3.2
25	2–2.5	4.1
31.6	2.5	...
35	2.9	5.6
40.8–41.2	3.2–3.5	6.1
46.5	....	7.2
50	4.0–4.2	8.0
60	4.8–5.0	9.4
71.5	5.6–6.0	10.8
74.4	5.8–6.0	11.3

Department Stores that Sell Electric Appliances

B Altman & Co. 5th Ave & 34th St, 1st Floor —Notions
Barnett Bros, Col'bus Ave & 74th St, B'm't
*Bloomingdale Bros, 59th St & Third Av, "
John Daniell Sons, 759 Broadway, Basement
*Gimbel Bros, 6th Ave & 33d St, Fifth Floor
*J B Greenhut & Co, 6th Ave & 18th St, B'm't
H C F Koch & Co, 132 W 125th St, Basement
*James McCreery, 5 W 34th St, Sixth Floor
*R H Macy & Co, B'way & 35th St, Bas'm't
Rothenberg & Co, 34 W 14th St, Basement
Stern Bros, 41 W 42d St, Fourth Floor
*John Wanamaker, B'y & 10th St, 7th Floor

*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

Cooper Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Bklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Smith-Eldridge Co Agents) —39 Cortlandt St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey St Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent) —236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3700 (C)
Ward Motor Vehicle Co—Mt Vernon N Y (C&P)
Waverley Co The (Poertner Motor Car Co Agents)—1759 Broadway (C & P)

Manufacturers and Agents (Continued)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Edison Thomas A Inc—141 Lakeside Avenue Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Mfg Co—165 B'way

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—527 W 23d St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42d St
Phila Storage Battery Co—American Building B'way and 58th St
Storage Battery Supply Co—230 East 27th St
United States Light & Heat Co—16-24 W 61st St
Willard Storage Bat Co The—228-30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—410 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303-305 Fifth Avenue
Hospital Supply Co The—53-55 5th Ave
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Av
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Bway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—30 E 42d St
Neel-Armstrong Co—2017 Fifth Ave
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 8th Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—5th Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St, 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 East 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 West 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 Broadway
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 West Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—1790 Broadway
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St
Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—1790 Broadway
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
H W Johns-Manville Co—Madison Ave & 41st St
Kandem Electric Co Inc—40 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 Broadway

Globes—Reflectors

Dealing William—1 Hudson St.
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42nd St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Johns-Manville Co H W—Mad Ave & 41st St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—10 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn, N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—1790 Broadway
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialties Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St
Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Spring 9890
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
*124 W 42d St	Bryant 5262
*151 East 86th St	Lenox 7780
*27 East 125th St	Harlem 4020
*362 East 149th St	Melrose 9900

*Open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts west of the Bowery and south of Catherine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street east of and including the Bowery, and north of and including Catherine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

19½ Bayard Street

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The Edison Monthly
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Joseph Williams, Treasurer
Lewis B Gawtry, Secretary

At a recent electrical exposition a young woman was seen to make her way from one domestic exhibit to the other. Any household novelty interested her, while she scarcely noticed the existence of the other displays. One might easily have classed her as a "domestic science expert." She, however, frankly admitted her profession; she was a highly paid cook in the service of a wealthy New York family. "You see," she explained pleasantly, "I have to keep up with all these new things, because I never know when I'll have to run them myself."

As the household staff of a fashionable establishment is trained to use the most modern devices of all kinds, the time is coming when the mistress of the small home, already familiar with their labor-lessening advantages, will teach her maid-of-all-work the use of such tools.

And, aside from any philanthropic desire to brighten the not too attractive lot of the domestic worker, what are the results that reasonably may be expected? Let this question be answered by putting a few other and very practical queries. Is it not worth while to substitute a thorough vacuum cleaning for the superficial dusting and sweeping that can be done in the same amount of time? Is it not worth while to govern the amount of linen to be used by cleanliness and comfort, rather than by the quantity of rubbing that one pair of hands can do? Is it not a social asset to have a neat maid answer the door, instead of a drudge? With the price of foods ever rising is it not true economy to have these best kept and cooked? Can a thoroughly exhausted woman prepare and serve a dinner as well as a fresh worker? To put it positively, and entirely from the standpoint of the employer, every extension of the usefulness, and every increase in the efficiency of the domestic employee, means greater freedom for the employing mistress—a release from the technical details of housekeeping and an opportunity to build up the real spirit of the home, a spirit which expresses itself largely in the personal and social relations existing among the members of the family circle.

❧

For years the Falls of Niagara have been giving generously of their power. Factory wheels are being turned, railroads operated and cities lighted by the energy that is taken from the rushing water. Now the City Council of the resort is planning an electrical installation for the flood illumination of the cataract. In view of what the Falls have already done for the city, this act, looking toward their after-dark beautifying, assumes certain of the elements of poetic justice.

The trial illumination which demonstrated the practicability of the scheme resulted in an appropriation of

$10,000 for furthering the project. The plan contemplates the illumination of the American Falls and the Rapids only. A battery of twenty-five reflectors has been installed, producing a ray powerful enough to penetrate the densest parts of the rolling mists with a smooth, soft light without dark centres or shadows.

While the aesthetic results will doubtless be their own reward, the city fathers feel quite certain that any outlay will be amply repaid through the inducement to tourists to tarry overnight in the city.

◆

Despite the dangers that lurk on the gummed side of the postage stamp, habit is not easily to be overcome. The most convenient means to make the stamp stick will continue. Nevertheless, the warning sounded by Drs Keilty and McMaster of the University of Pennsylvania should not go unheeded. In experiments conducted at the McManus laboratory they established the fact that postage stamps do carry germs, and therefore may be classed as a disease spreading danger.

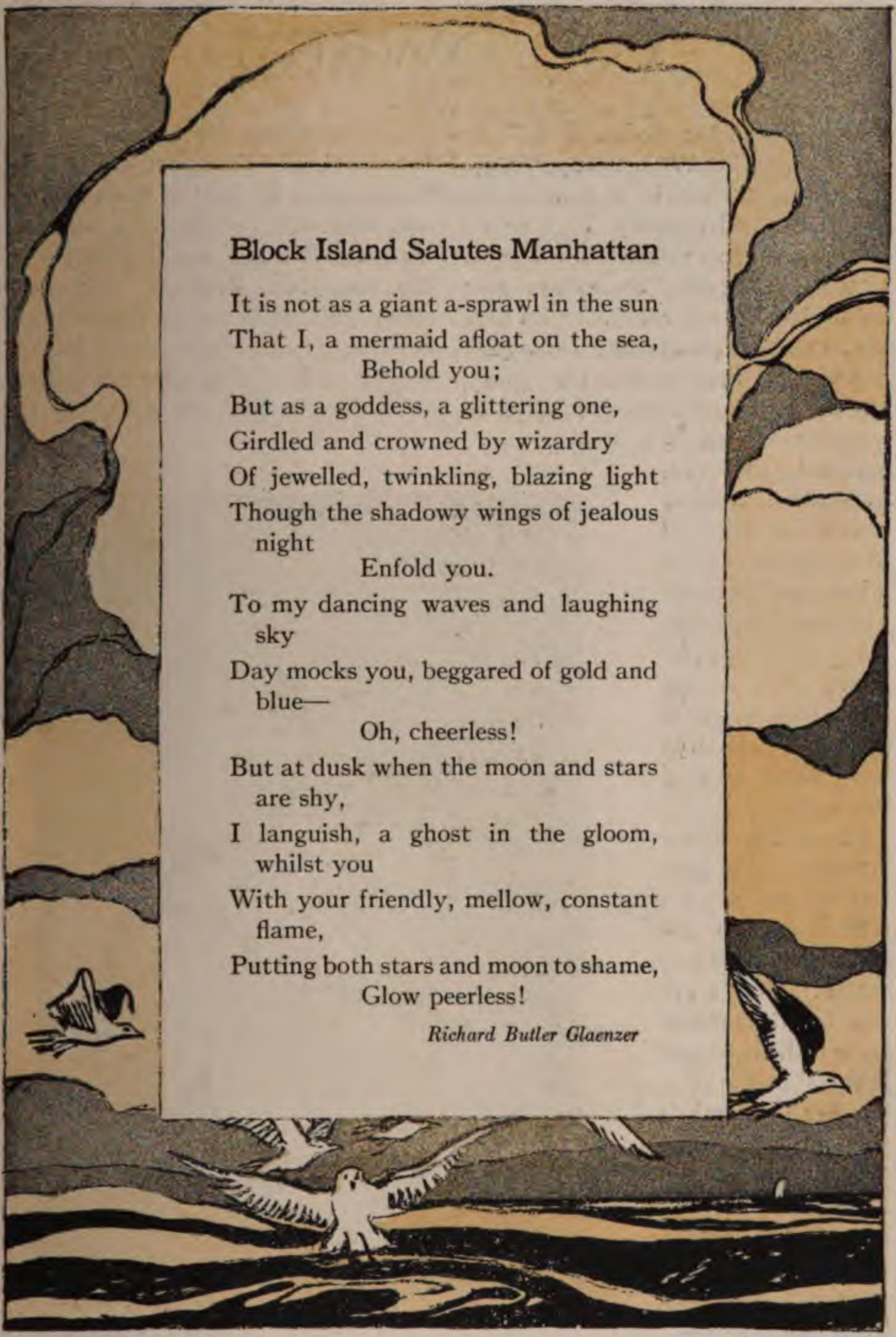
In forty-eight tests out of a total of fifty, bacteria were found. The fact that in only two cases were the germs of a malignant type does not lessen in any degree the danger that lurks in wetting the gum with the tongue. It may not be practicable to electrocute these pathogenic organisms. Nevertheless, electricity has removed the art of stamp sticking from the class of hazardous industries.

Of course, as a general rule, the menace in the case of the occasional individual letter is quite remote. It is when the practice is followed by those who send mail in quantity that the danger becomes threatening. Not so many years ago, almost every counting room had its boy who stuck the stamps on the day's output of letters. Sometimes he used a wet sponge to help. But if the sponge dried in the midst of operations, he followed the path of least resistance.

Thanks to the genius who saw in such practices a woeful evidence in inefficiency, there is a machine which not only affixes the stamps but at the same time seals the flap of the envelope. Operated by electric motor, of one-eighth horsepower, this automatic sealer and stamper handles no less than 15,000 pieces of mail an hour, and so ingeniously is it devised that by a simple adjustment letters up to the largest size may be passed through. There may be germs on the back of the stamps. If there are they will stay there and complete the journey in a safely sealed resting place.

◆

It is gratifying to observe that in an emergency, American genius usually rises to meet the situation. Take, for instance, the shortage of bleaching material following the outbreak of the war. For a time it looked as though America would sleep between yellow sheets and wear dusty looking linen. Then native industry asserted itself and evolved a machine which, using salt and water and employing electric current to produce electrolysis, makes a bleach every bit as satisfactory as that used before the war. A fuller account of this process will be found on another page of this issue of The Edison Monthly.



Block Island Salutes Manhattan

It is not as a giant a-sprawl in the sun
That I, a mermaid afloat on the sea,
Behold you;
But as a goddess, a glittering one,
Girdled and crowned by wizardry
Of jewelled, twinkling, blazing light
Though the shadowy wings of jealous night
Enfold you.
To my dancing waves and laughing sky
Day mocks you, beggared of gold and blue—
Oh, cheerless!
But at dusk when the moon and stars are shy,
I languish, a ghost in the gloom, whilst you
With your friendly, mellow, constant flame,
Putting both stars and moon to shame,
Glow peerless!

Richard Butler Glaenzer

Decoration by C B Falls

The Swamp

JUST what the designation "The Swamp" conveys to the average New Yorker is a matter for speculation. To many it has no meaning, while to others it indicates a section of the city "somewhere near the bridge," noted chiefly for its narrow, crooked streets and its odors. But to those familiar with the history of Gotham the Swamp is replete with tradition. Men of national and international renown have been identified with the locality,—it has been the birthplace of fortunes that today are famous, and it has been the home of political cliques that have swayed the nation.

Since the Revolutionary War the Swamp has been identified with the hide and leather trade. Here were situated the tanneries and the boot and harness shops of a century ago. And although the boot and shoe makers and the tanners have disappeared, the leather merchants and the dealers in hides and skins still remain.

The Swamp today embraces those portions of Jacob, Ferry, Gold, Frankfort and Cliff Streets that lie in the deep hollow overshadowed by the high walls of masonry forming the anchorage of the Brooklyn Bridge. Practically every building in narrow Jacob Street is devoted to hide and leather houses, and building after building in Gold Street and the rest of the

Photographic Bureau of The New York Edison Company

On the Edge of the Swamp, not far from this Point, the First President had his Mansion

thoroughfares bears the signs, and exudes the odors, characteristic of the hide and leather industry.

A swamp it was in the old days; a depression filled with rushes, bogs and brackish water that rose and fell with the tide. And a swamp it is today despite the city streets that cross and recross it and the buildings that have been erected on every hand. After a particularly high tide Jacob and Ferry Streets are flooded to the depth of several inches and some of the buildings have been constructed without cellars. The bottom of the swamp is below high water today, just as it was in the days when a fine old highway wound round the edge of the marsh. This road led to the stately dwelling on the eastern brim of the bowl at Cherry and Frankfort Streets, where President Washington and the first lady of the land held court while New York was the young Republic's Capital. In the evening the drive that skirted the depression and reached out into the Bowery was thronged with the notables whose names have since become conspicuous in American history.

Photographic Bureau of The New York Edison Company

A Motor now Operates this still active One-Hundred-Year-Old Leather Lift

It was not long after this period that the Swamp began to become a centre of industry and the gathering place for the tanners and leather merchants of the country. In 1790 the first leather worker made his appearance, coming from Collect Pond (which was located at about the point where the Tombs now stands). This pioneer was James Brooks and he was accompanied by Jacob Lorillard, who had done his tanning at Centre and Magazine Streets (where the old powder magazine was located).

Photographic Bureau of The New York Edison Company

Experts Inspect every Goat and Sheep Skin Brought into the Warehouse

Other tanners, sensing the fact that in the future the centre of their business was to be the Swamp, soon followed and before long Frankfort and Gold Streets were entirely built up.

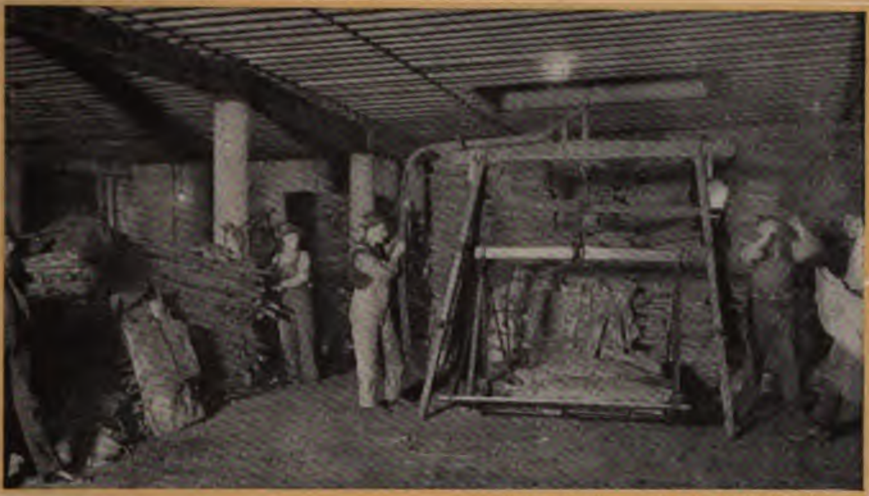
But with all this development, and the construction of tannery vats, storehouses and the like, the outskirts of the Swamp were still the favored locations for turkey-shooting contests on Thanksgiving Day. Here, too, Gothamites of the knickerbocker generation built forts of huge strips of discarded tanbark and *chevaux-de-frise* of cattle horns discarded by the leather makers and held their always active gang fights.

The progress of tanning in this country and the demand for property in the Swamp gradually put an end to the tanning industry in New York. The locality was developing in leaps and bounds. New streets were cut across its surface (they were muddy streets to be sure and not at all pleasant to travel); new buildings were being erected, and soon the tanning vats gave way to storehouses for hides and finished leather. Boot and shoe makers came in, harness shops opened, leather importers and exporters and leather brokers bought property and erected buildings, and hundreds of thousands of dollars' worth of skins, hides and even furs were being handled. It is interesting to note that thousands of deerskins were among the early products of the leather houses and tanneries of New York. The animals roamed the woods just beyond the city and at that time there existed a big market for deer hides.

Early in the century the Swamp became of political as well as commercial importance. Captains of industry became captains of politics also and all of the prominent parties were represented. Washington Hall, the headquarters of the Federal party, was located at Broadway and Chambers Street, and Tammany Hall was flourishing at the same time as a wigwam where weird and wonderful attempts at Indian celebrations seemed always in progress. In those days the Tammanyites followed the customs adopted from the aborigines and at parades, rallies and the like feathered headdresses, wampum and the various other regalia were used. Harmony Hall, another meeting place for Democrats, flourished at the very edge of the Swamp.

Through a century and a quarter there has been little change in the appearance of this section; modern buildings have been erected in some streets, and the survivors of the past still linger in others. The trade that made the Swamp famous is still the business of the occupants. To be sure the industry has broadened until now leather is one branch and hides another, but both are liberally represented. Millions of dollars in business is transacted in this secluded section of the city, often overlooked entirely by the average New Yorker. There are warehouses too (structures of another generation mostly) that house thousands of hides of all kinds representing vast sums of money.

The amount of business transacted and the activities of the establishments in the Swamp can be gauged by the amount of Central Station service used there. Almost every one of the old buildings is equipped with lighting service, and current is used for elevators and various other forms of lifts in the warehouses. Practically all of the current consumed is supplied by The New York Edison Company.



Photographic Bureau of The New York Edison Company

The Balance Scale is Still Used by the City Weighers Who Operate in the Swamp

A Printing Craft Community

WHEN an institution as conservative as the print shop moves up-town in force to the vicinity of the new Post Office, a motive other than popularity of location must be looked for. And the look ends abruptly at the Thirty-third Street corner of Eighth Avenue. While the neighborhood shows a number of new buildings designed for printing work, the one in question seems big enough and attractive enough to lure thither the whole industry.

Photographic Bureau of The New York Edison Company

Offices of the "Smart Set," Typical of Office Equipment Throughout the Building

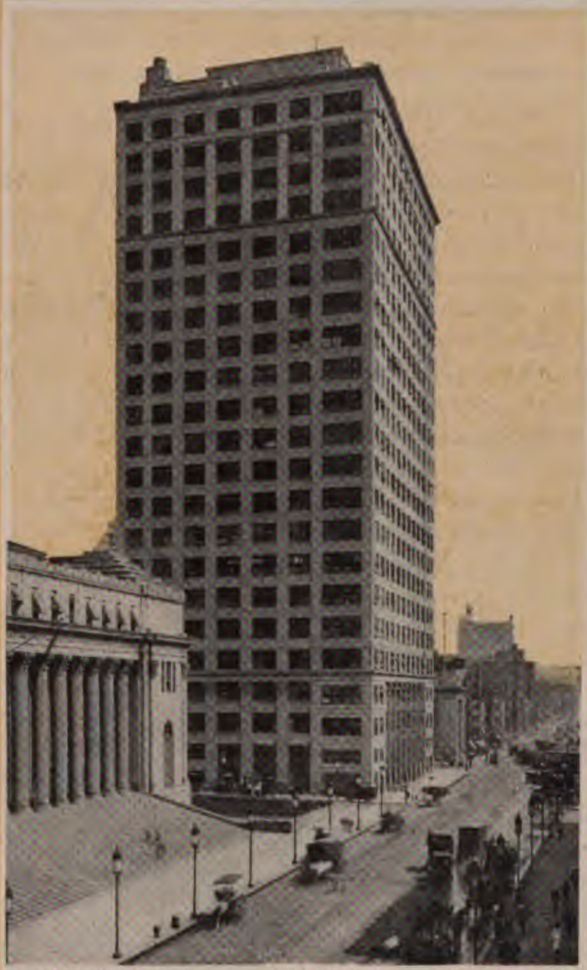
In point of fact, the Printing Crafts Building, just finished, was put up not to create but to meet a condition. For some years progressive printers have headed up-town, partly to keep in touch with wholesale interests, but mainly because the lofts of the old quarter had neither the structural strength nor the electrical facilities to warrant the use of modern machinery. A further inducement of course was proximity to the new Post Office.

While differing strikingly from the city's first print shop in Pearl Street at "The Sign of the Bible," the Printing Crafts Building deserves the scriptural mindfulness due all good things. Costing approximately two and a half millions, the great structure appears in architectural harmony both with the Post Office and the Pennsylvania Terminal diagonally opposite. The facade, as high as the fourth story, is of rough gray terra cotta. Above this use has been made of gray-faced brick banded with courses of fine white terra cotta to the seventeenth floor. From here to the twentieth story extends a peristyle of Doric columns.

The strenuous requirements of the modern printery have received the exhaustive attention of construction engineers. Such, for example, is the strength of the floors that a carrying capacity of 240 pounds live load is guaranteed to the square foot in addition to the dead load of the building itself. This permits of the operation of the heaviest presses now known. Again, and of vital importance, such care has been given the details of steel construction that vibratory disturbance is done away with. The means employed is an elaborate and specially worked-out system of bracing, affecting particularly the office floors and the engraving departments of the many tenants. A third and tremendous advantage is the placing of supporting columns to allow of the installation of any desired number of presses without unnecessary loss of room and with due regard to their convenient alignment. These columns in every instance have outlet boxes connected with electric conduits, a provision assuring the ready transmission of power to any part of the floor.

In the important matter of elevator service the building has been equipped with an abundance exceeding that of many of the newer office buildings. Seven electric passenger cars of the gearless traction type have been installed by the A B SeeCompany. These cars, of which four are running on an express schedule, operate at 600 feet per minute. Of the same make and motive power are seven geared traction freight elevators of 6,000 pounds capacity operating at 300 feet per minute. The passenger cars open at each floor on a large lobby entirely shut off by fireproof walls which transform them into zones of safety in case of fire. In addition to the usual stand-pipe and sprinkler system, the building incorporates every fire-safety recommendation of the municipal and insurance authorities.

While most if not all of the mechanical advantages mentioned are electric-



Edward L Larkin, Architect

Photographic Bureau of The New York Edison Co

The Printing Crafts Building in which every Industry Bearing on the Printing Art is Represented. This Building is on Edison Service

Photographic Bureau of The New York Edison Company

The Admirably Appointed Composing Room of A E Dittrich, Ltd

ally operated, the presence of Edison Service throughout the premises raises these advantages to the *n*th power. With private-plant service, even individual motor drive cannot be proof against the breakdown of the whole system through trouble in the engine room. Supplied as it is from the unfailing resources of the Central Station, the Printing Crafts Building guarantees its tenants a power dependable at all times.

The importance of such a supply is further shown in the matter of overtime work. While accurate comparisons of the two supplies are difficult owing to a common basis of equipment, it is true that under private-plant conditions, the cost for current when such work has to be done averages for the ordinary shop two dollars extra an hour. On the contrary, the Central Station, to which night and day work are one and the same, is on hand to supply that same shop for the same work at regular meter rates. Finally Edison Service insures an evenness of operation that can be appreciated only by those familiar with the exactions of modern printing.

Photographic Bureau of The New York Edison Company

Printing The Edison Monthly on the Electrically Driven Presses of the Dittrich Establishment

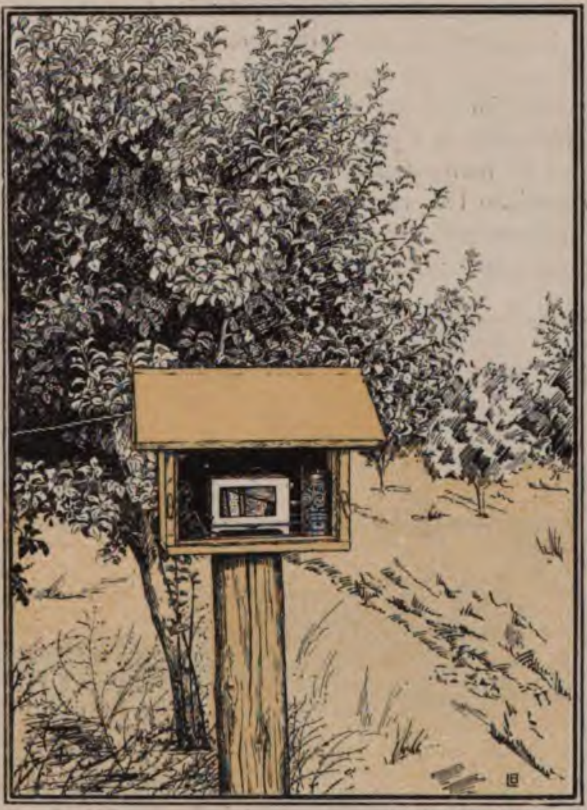
Most Powerful Searchlight

A SEARCHLIGHT with a five-foot mirror, from which light shafts could be seen two hundred miles away, has just been completed at the General Electric plant for the United States Navy. The Government tested the light at the New York Navy Yard and on the battleship Texas. Two experts sent to points one hundred miles away report that the rays are as distinct as when seen from the testing point.

Irrigation Among the Rockies

OPEN an atlas—if geographical memory does not suffice—and turn to the map of the United States. Then consider for a moment the irregular line made by the eastern boundaries of the three Pacific Coast States, Washington, Oregon and California. Between this line and the Pacific Ocean lies a territory whose area is approximately one-eleventh of the total area of the United States, a territory inhabited in 1900, before all this interest in irrigation had really begun, by less than one twenty-eighth of its present population. By an inscrutable decree these States possess more than forty per cent of the aggregate water-power of the entire country, while "the total estimated potentiality of the Sacramento and San Joaquin valleys' drainage areas alone is 84 per cent of the total water-power developed in the United States. Yet only a few years ago the marvelous agricultural resources of these and the neighboring inland States, scarcely less rich in natural advantages, remained undeveloped; they were mining, rather than agricultural regions, of surpassing fertility.

To electricity is due in large part the transformation which has been wrought, for industrial development is dependent upon cheap and convenient power without which natural resources are unavailing. It is significant that a relatively small proportion of the population of the West employs nearly one-fourth of the entire generating capacity of the United States. In the States mentioned current for lighting and elec-



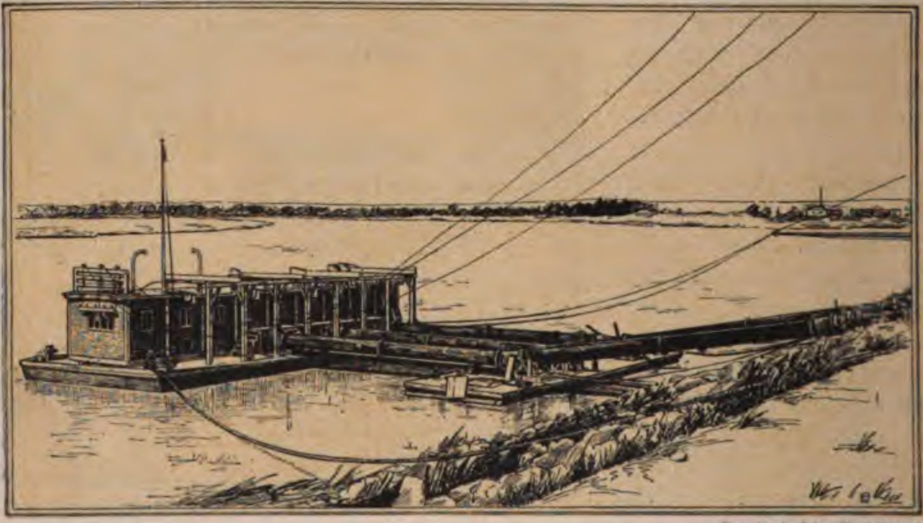
Drawing by Edna Hood Lissak

Heating Orchards in the West is a Common Practice. Orchards are Equipped with Heating Pots and the "Thermometer Alarm," which is Electrically Connected with the House, Summons the Family to the Orchard when the Temperature Drops

trical power for pumping and other farm uses is supplied by a half-dozen or more large companies, some of which constitute the greatest utilities west of Chicago and possess the finest hydro-electric systems of the country. Within the electrical zones thus created water derived from lakes and rivers and impounded in huge reservoirs is brought by means of canals and ditches to the farm lands which are to be irrigated, as described in a preceding article of this magazine.

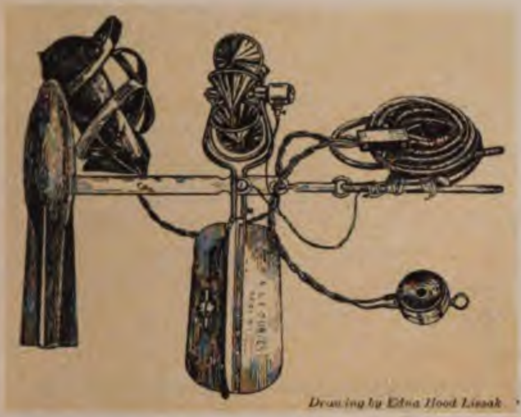
But the Western farmer and the ranch owner are no longer dependent for the irrigation of their soil upon stipulated amounts of water, obtained at stated times when the weir gates are opened, for water-bearing strata abound in the agricultural regions of California, in the valleys of Nevada, and in many portions of the Great American Desert. Individual pumping from wells situated upon his own land has afforded the land owner complete control of his water supply, so that it may always be used when and where it is needed. Hence the farmer whose crops are irrigated by electricity need not see them suffer for lack of moisture; further, well water that has been clarified by the soil has obvious advantages over ditch water, since it is free from the sand, weed seeds and trash that find their way from the canals and larger ditches into the minute ducts that cross the farmer's land.

The typical equipment of the farmer for electrical irrigation consists of a horizontal centrifugal pump, direct connected to an electric motor set in a pit which has been prepared for it near the water level of the well. Within the pit, which is boarded or lined with concrete, are placed a ladder for reaching the pump, motor and a small suction pump that is used for priming, while the shed or house which covers the well above



Drawing by Edna Hood Lissak

Pumping Barge on the Missouri River. The Barge is Connected with the Bank by Flexible Pipes which can be Lengthened or Shortened, as Need Arises. The Pumps are Electric, and the Pumped Water is Used to Irrigate 3,000 Acres of Land near Williston, N D



Drawing by Edna Hood Lissak

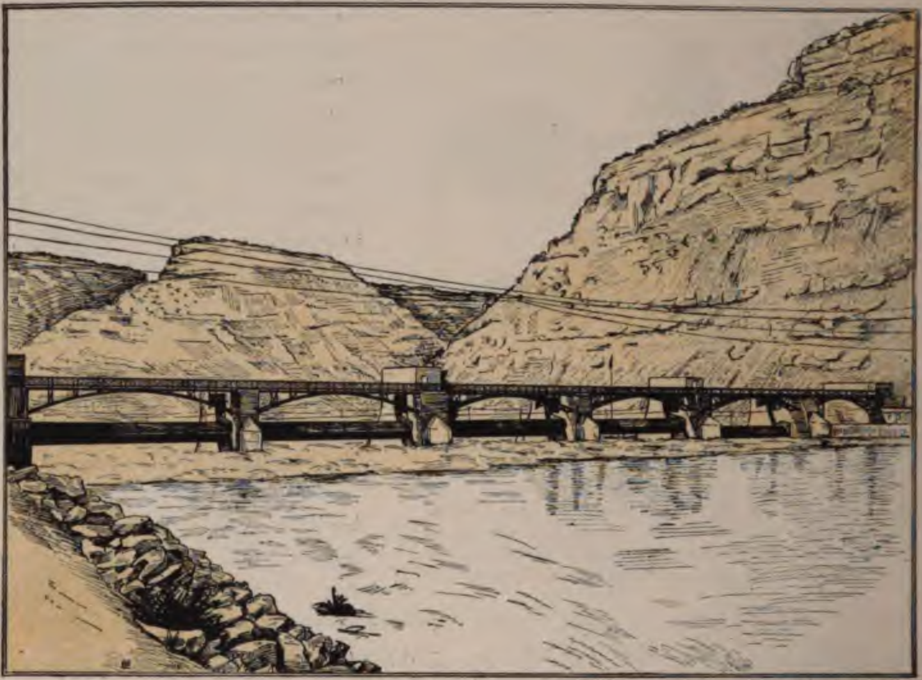
Electric Current Meter, the Standard Instrument for Determining the Velocity of the Flow of Water. The Number of Revolutions of the Bucket Wheel is noted through a Sound, Electrically produced by a Contact on the Shaft and conveyed to the Operator by means of the Telephone Receiver. Sometimes the Number of Revolutions is recorded by an Electric Register

ground contains the switch, fuses, meter, upper section of the discharge pipe, and other accessories. Current is brought to a pole near the house, reduced to the required voltage by transformers, from which wires run to the switch within the pump house and thence to the motor within the pit. When the water is far below the surface a shaft takes the place of the pit; a vertical pump is used instead of the centrifugal pump, and the motor is installed at the surface. For such service in individual pumping the electric motor, because of its greater convenience and the cheapness of electrical energy, is steadily replacing the gasoline engine.

The irrigation load from the circuits of the power companies up and down the Pacific Coast is already large and is constantly increasing. In the case of the Mount Whitney Power and Light Company, whose territory extends over Tulare County and a portion of central California, it is more than eighty per cent of the company's output. That from the Pacific Gas and Electric Company, which serves by its system 400,000 acres in the Sacramento and upper San Joaquin valleys, is about 35,000 horsepower, and the motor installations of the Pacific Light and Power Company, which has developed the electrical irrigation industry chiefly in the Yakima, Columbia and Walla River valleys, is about six thousand horsepower.

The motor installations for individual users of electricity for irrigation are from two to twenty horsepower, one horsepower being sufficient for the irrigation of about six acres. Frequently when the farmer is unprovided with other motors for the house and farm, the belted motor, which may be removed and used for various purposes during the Winter months, is preferred to the motor which is directly connected to the pump, although the latter has a somewhat higher efficiency.

Upon the nature of the crops to be raised, the size of the tract to be irrigated, and the character of the soil depends of course the amount of water which must be used, sandy soil requiring the greatest amount of moisture. The water is impounded in a reservoir near the well, the pumping outfit being in operation throughout the entire twenty-four hours of the day, while the actual work of irrigation takes place from sunrise to sunset. The San Joaquin territory, 200 miles in length and fifty-four in breadth, within which there are 700



Drawing by Edna Hood Lissak

Grand River Dam near Grand Junction, Colorado. This is an Unusual Type with a Roller Top Operated Electrically, Power being Generated at a Coal Mine about Six Miles away

pumping plants, is served by the San Joaquin Light and Power Corporation. In some sections groups of farmers have equipped pumping plants, pumping and using the water in turn as they require it.

Many sections of the West, such as the Yakima and Columbia River valleys, are almost wholly dependent for the raising of crops upon artificial irrigation made possible by electricity, while other sections supplement the rainfall by this method of fructifying the soil. In the rich orange lands situated in Kern County, California, well water is abundant and more than 160 acres may be irrigated from a single plant. Tulare County has developed through the use of electrical irrigation from a sparsely settled portion of the State to an important citrous and fruit growing region where electricity for irrigation and other farm purposes is employed on one-third of the farms. In that State there are now more than 35,000 irrigated farms upon which, it is said, one-third of the total agricultural products of the State are raised.

The Telegraph Wires

A little ghost glides swiftly
  Along each shining wire
That stretches down the highway,
  Past roof and tree and spire.

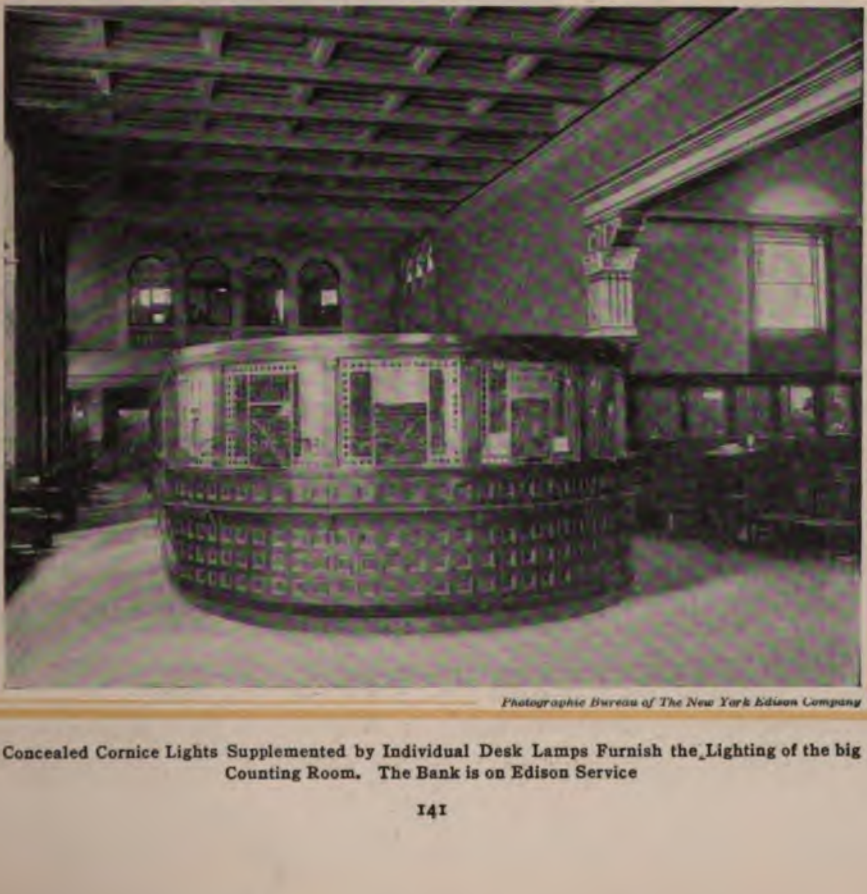
And, oh, the strangeness of it;
  Not any watcher knows
What grief on this one travels,
  What joy on that one goes!

Charlotte Becker

The Fifth Avenue Bank

SINCE the day when Peter Minuit bought Manhattan Island for $24 worth of gewgaws, property in many cases has changed hands with a rapidity outdoing political fortune or matrimonial vicissitude. In fact, to attempt to trace the holdings of a typical lot on an important thoroughfare is to thread one's way well into the maze of real estate history making up the surprising record of this island. Of the exceptions presenting themselves, the land now occupied by the Fifth Avenue Bank is notable. These lots, from the memorable spring of 1626 to the present, have changed hands only four times. To translate in good American, the property at Fifth Avenue and Forty-fourth Street, sold by the city in '48 for $3,850, was acquired by the bank after but three ownerships for $357,066.

Antedating this fulfillment by twenty-two years, the bank, in '75, inaugurated a healthy business in the basement of the old Sherwood House. The original minute book furnishes an interesting register of early rental values. These basement offices were



Photographic Bureau of The New York Edison Company

Concealed Cornice Lights Supplemented by Individual Desk Lamps Furnish the Lighting of the big Counting Room. The Bank is on Edison Service

secured "at a rental of $2,600 per year, said rental to include gas used and the heating of the rooms." The bank moved across the street to its present address in '66.

While conducting itself on lines eminently compatible with the property traditions envolved, the Fifth Avenue Bank has followed at the same time a policy of sound progressiveness. Abandoning the well-worn paths at points dictated by good reason, the institution is looking continually into new ideas, testing their worth, and adapting them to the ultimate good of the business.

Most striking of these innovations is an essentially changed attitude towards women's accounts, an attitude resulting in a very substantial growth in these deposits. Not only are women provided with separate tellers and bookkeepers; the bank has opened for them a large and beautifully appointed rest room. Decorated in Georgian Renaissance, this interior displays walls of golden brocade set off by pilasters and a cornice of ivory color, the whole harmonizing with a great rug of East India work. Three-light candle brackets of the period contribute essentially to the general effect. Adjoining the rest room are convenient dressing rooms with maids in attendance.

Photographic Bureau of The New York Edison Company

The Bank's Club Room for Employees. Adjoining is a Well-Equipped Billiard Parlor

In furthering the idea of maximum service to all, the institution has arrived at a point that ten years ago would have been thought fantastic. It must still be admitted unusual for a busy bank to go to the trouble of arranging interviews with steamship agents on behalf of patrons bent on foreign travel. Supplementing this service and in addition to the furnishing of letters of credit, the bank keeps at hand considerable amounts of foreign currency. Patrons traveling in the United States are invited to use the bank as postal and telegraphic headquarters.

Highly seasonable and smacking of pure philanthropy is an income-tax advisory bureau at the disposal of depositors whom the exigencies of fortune and the law may have driven to untimely desperation.

Attention to these asides presumes, and rightly so, an uncommon effectiveness in the discharge of routine work. In this regard again the bank is in a position to give pointers to many an institution of more "progressive" pretensions. Indeed, if there is a time-saving or safety device in any way related that the Fifth Avenue Bank is not using, the fact argues badly for the device.

To describe these of course electrically operated mechanisms would exceed the present space. Reference must be made to a cheque-cancelling machine, an endorser, and one of the new adding-writing machines. The office equipment includes as well a motor-driven coin roller, an envelope machine, a multi-color press, a telautograph, and a dictaphone. A curious little affair detects by the aid of a magnifying glass and an electrically lighted transparency any tampering that may have been tried on a cheque.

Photographic Bureau of The New York Edison Company

The Ladies' Salon, a Georgian Renaissance Interior Opening off the Main Banking Room

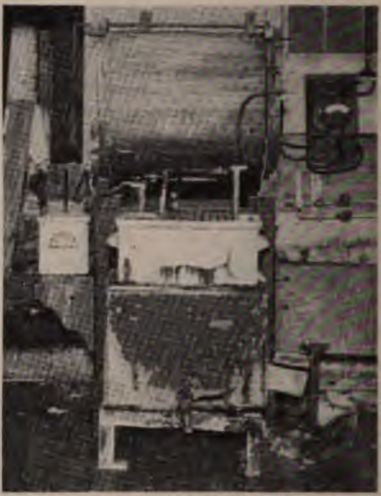
Apart from the usual electric protective service the vaults, which rest on great piers some few inches from the basement floor, are lighted underneath in long channels. A mirror running at an angle along the sides reveals at a glance any nocturnal drilling operations that may be in progress.

By way of ending the bank's records and this, one more device is hereby mentioned. This is an electric paper-macerating machine. Formerly, when obsolete ledgers were to be destroyed, a truck conveyed them to some remote spot in the Jersey wilderness where they were scrupulously burned. The new machine not only makes tatters of these but a salable by-product for the deserving institution of its adoption.

The Chlorinator

ELECTRICITY has saved a situation created by the hostilities in Europe that might have proved very serious for the laundrymen. Incidentally electricity has taught Americans that they are not as helpless or as dependent upon their imports as was supposed.

Early in the war America's supply of bleaching powder was shut off.



Photographic Bureau of The New York Edison Company

The Chlorinator which Produces the Bleach so Necessary for Laundry Work

There were two reasons for this, the first being the English blockade of German ports and the second being Germany's indisposition to part with chemicals that were to prove valuable in munition manufacture.

There was a mad scramble for bleaching powder in this country and unheard of prices were offered for what little remained in the open market. There was not half enough to go around, however, and when the business men realized that the war might be of indefinite duration they knew that something must be done and done quickly or nice, snow-white linen would soon be strange to the average New Yorker.

Then from Chicago came the announcement of a machine that could manufacture a bleaching powder said to be of a better quality than that imported from Germany. With this news also came word that the machine could be operated electrically and that the new bleach could be produced for a great deal less money than the imported bleach could be purchased for under ordinary conditions.

This machine, the fundamental principle of which is the conversion of salt and water into a bleach by means of electrolytic action, consists of a fifty-gallon vat, a fifty-gallon stone tank, a soapstone electrolytic cell, with an ammeter, thermometer, and hydrometer. The equipment can be set up in any laundry and after being connected to the electric service lines the new bleaching agent, which has been named Chloritone, can be manufactured by the consumer as it is needed.

Besides saving a situation the invention of Chloritone has done a great deal more for the laundry industry. It is said that the use of this bleach preserves the life of linen rather than decreasing it, as was the case when bleaching powders containing chloride of lime were used. Because it contains no lime a perfect whiteness is imparted to the linen during the bleaching process whereas the imported bleaches produced a gray white which eventually became a disagreeable yellow.

There can be little doubt as to the value of Chloritone now for it has been accepted by a number of New York laundries, among the better known of which are the Sanitary Wet Wash Laundry, the Globe Coat and Apron Supply Company and the New York Wet Wash Laundry. Here the chlorinators have been installed and with the aid of Edison Service, bleach is being manufactured in quantities. This not only speaks well for American industry but for the bleach itself.

The Blue Valley Fleet

NEW YORK receives, among other things, 164,000,000 pounds of butter annually. This city, perhaps, does not consume all of that great quantity, but it is safe to say that at least three-quarters of it spreads Gotham bread. Butter is rated among the daily necessities, for the city demands a certain amount of it every day. But this creamy yellow product of the dairies is quite perishable, and consequently the supply must be moved without delay and disposed of quickly. And since this matter of transportation of butter is the point of this story, it is just as well to state at the outset that electirc vehicles have been selected by several of New York's butter dealers as the best means of distribution from the wholesale warehouse to the various retailers.

One dairy in particular is that distinguished by the bright splash of blue that enlivens the more or less prosaic "produce" street on the west side of Harlem, known in the Directory as Twelfth Avenue. Here the Blue Valley Butter Company of Chicago, New York and elsewhere maintains its metropolitan distribution centre, and from this point twenty electric vehicles, one-ton trucks of the Walker make, start on their tours of the city, each carrying its supply of the well-known blue and gold packages of Blue Valley Butter.

One of the problems and the most difficult in the way of hauling that the Blue Valley Butter Company faced, was the number of short hauls, or to state it more clearly, the number of stops to be made by their vehicles during a day's deliveries. It was estimated that trucks carrying butter to various retailers made anywhere from fifty to one hundred and ten stops during a day. In reality this meant one hundred and ten short trips from one establishment to another, and it was a problem to find a delivery system that would meet the situation.

The problem presented itself first in Chicago, where the main office is

The Blue Valley Firm uses Walker Electrics to Serve Butter to the City of Chicago located, and the officials there had, after careful investigation, the satisfaction of finding the solution. They finally determined on a fleet of electric wagons to do the work. First it was found that the electrics could cope with the peculiar situation arising from the frequent stops incidental to wholesale butter distribution. Then the officials, realizing that cleanliness must be considered far above everything else in the dairy business, decided that gasoline trucks or horse-drawn vehicles had no place in their delivery system. Both were bound to produce soiled hands at least, and such conditions were not to be countenanced among the drivers of their cars.

Everything considered, electrics presented the strongest appeal and the management decided to adopt them forthwith. The Walker one-ton truck was accepted after exhaustive tests and several were put into service. So satisfactory was their work that the entire Chicago fleet, some thirty cars, consists of this type of vehicle.

Soon after this the Blue Valley Butter Company decided to enter the New York territory, and the West Harlem headquarters was opened. In view of the experience in Chicago, the officials had little difficulty in deciding what vehicles were to be used in this new field, and a New York fleet of twenty cars equipped with Edison A-6 batteries, was established. This fleet has cared for all deliveries in the Metropolitan district for the past year, giving excellent service. According to the manager in the local field, the electrics are proving their worth every day and their operation constantly shows a saving to the Blue Valley Dairy Company of time, money and worry. And the rapid growth of the business here is in a measure accounted for by the efficient delivery system.

Twenty Walker Electric One-Ton Trucks Compose the Blue Valley Fleet for New York City

Of High and Low Degree

AMERICA is not really as helpless as many have been inclined to believe. Uncle Sam may have been dependent upon Europe to a certain extent for those things in which European nations specialized, such as dye stuffs, chemicals of one kind or another, and similar products—and this fact has led some to think that the number of commodities imported from the nations now at war is far greater than truth indicates. As a matter of record there are not many commodities on the list of imports that are not produced in America in quantity. And as for quality, well, there are few things accomplished outside of America that cannot be done as well, if not better, right here.

Drawn from an old print by Edna Hood Lissak

An Interesting Combination of Clock, Barometer and Thermometer Constructed for the Palace of San Donato, Florence, in the Eighteenth Century

A case in point is the thermometer. Because many of the thermometers for household use bear the imprint, "Made in Germany" or "Made in Austria," the popular opinion has been that America was woefully lacking in artisans who could develop perfect articles. Either that or the opinion was current that America could not produce the highly tempered glass necessary for the manufacture of such delicate instruments, and therefore left the making of these very important indicators entirely to the genius of the German and Austrian glass-blowers. Indeed, of late there have been one or two erroneous articles in print relating to the thermometer situation and how it has been found necessary to import expert thermometer makers from Austria to teach American glass-blowers how to manufacture these instruments.

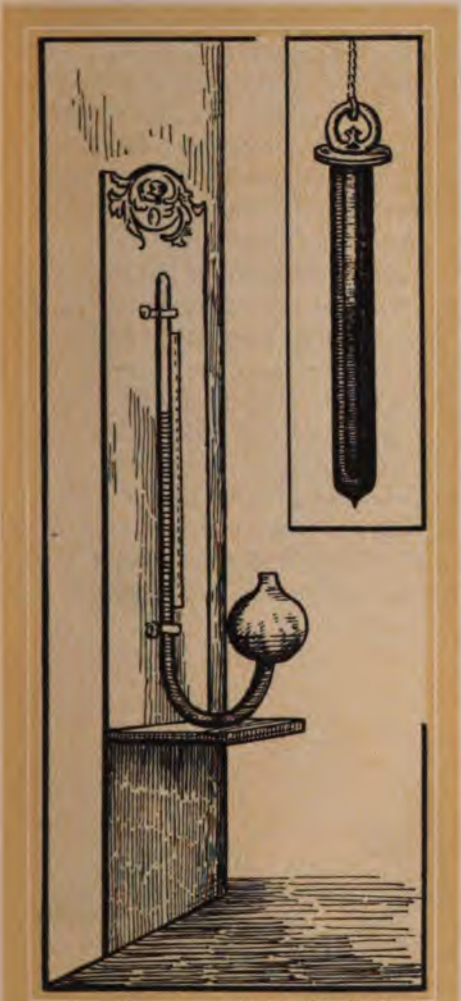
If these imported workmen reach New York and begin investigating the conditions of the thermometer industry in this city they will be more than surprised, and they will probably come to the conclusion that their services are not as necessary here as they believed. Among New York's business firms there are four remarkably well equipped establishments where thermometers are being made. One of these institutions dates back to 1833 while another boasts a successful business career since 1855. There are, moreover, two firms in Brooklyn where similar products are made in quantity, and where about five hundred workmen are employed. In Rochester, New York, there is still another firm, larger even than the Brooklyn establishments, in which some seven hundred workers are kept constantly busy trying to fill the needs of the users of thermometers, and added to this there are at least a dozen individuals who conduct a thermometer manufacturing business on a small scale.

Drawn from an old print by Edna Hood Lissak

Galileo, Santorio and Drebbel are given the Honor of being among the First to Invent a Temperature Indicator

As may be assumed, the making of these delicate instruments is rather difficult and calls for, among other things, an expert knowledge of glass-blowing. The thermometer maker must also know how to test the instruments to conform with the scales set down by scientists. There are in all more than a score of different kinds of thermometers, ranging from the ordinary temperature indicator usually found in the most out-of-the-way place on the back porch to the highly delicate clinical, chemical and dairy thermometers. Some are tiny things that can only be read with the aid of magnifying glasses, while others range in length from eight to fifteen feet. These last are known as stock thermometers and are used for measuring the temperature of liquids in big casks and vats. Dairy, bath and angle thermometers are the most commonplace of the instruments manufactured in New York City, yet among the products of the local firms are indicators to tell the temperature of varnish solution, coal oil, asphalt, ovens, incubators, chemicals and many laboratory products.

Although each of these thermometers takes a different form, and requires different scales and casings, they are nearly all the same in principle, being made of a long glass tube with a bulb at one end containing the mercury. These bulbs are fused on by the glass-blowers, the highly tempered crystal being subjected first to an intense heat and then "blown" to its proper shape. It is at the point of heating that electricity first enters the operation of thermometer making. It is necessary to heat with a blue flame forced against the glass by air pressure, and this pressure is created by a motor-driven air compressor of small capacity, which is operated almost ceaselessly to keep the air flowing.


Drawn from an old print by Edna Hood Lissak

In the Early Eighteenth Century the First Mercury Thermometer was Invented

When the glass reaches the desired temperature and has been fused to the long tube, the blower slowly moulds the bulb to the proper shape and dimensions by air pressure delivered through a blow-pipe. Having shaped the bulb the glass is broken off and the hot crystal allowed to cool slightly. When the heat has been reduced to a certain temperature, the end of the thermometer is dipped into a jar of mercury and the action of the heat on the quicksilver draws the active fluid into the glass tube and thence into the bulb. The accuracy of the thermometer depends entirely upon the size of the bulb and the quantity of mercury it contains. After the first quicksilver is admitted, the thermometer must be permitted to cool, and later tested for accuracy, in order to determine how much more mercury must be added or how much removed to make it perfect.

Electricity is used in several other operations in thermometer manufacture beside blowing. Glass saws are required to cut the delicate tubing and these are operated by electricity. So too are the buffers, grinders and polishers used by the operators who do the finishing. But of course the most difficult phase of the work and the part upon which most depends is that of the glass-blowers. Years of practice and training are required before a man is qualified to call himself an expert in this line, and of course only experts are able to manufacture such delicate instruments as thermometers.

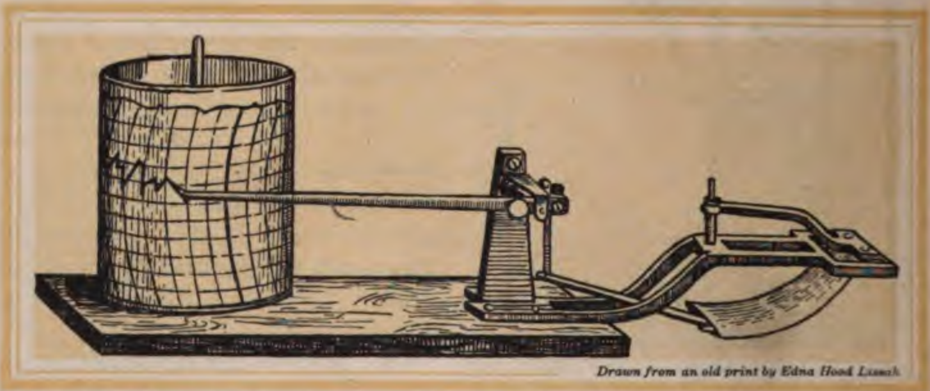
The thermometer is not an American invention needless to say, nor is it a very modern contrivance.

In truth the first temperature indicator was thought out and designed as early as 1592. The first thermometer has been variously ascribed to Galileo and to Santorio and Drebbel in the early part of the Seventeenth Century. It was crude indeed when compared with the accurate and highly sensitive instruments of today but it contained the fundamental principle and was the real beginning of the development of an article highly important to science, commerce and every day life.

As in the thermometers of today, the glass tube and the glass ball or bulb were utilized. The properties of mercury were not understood thoroughly at that time and in the first instrument of this kind water was used. The tube was heated until the air within became rarefied, when it was placed upright in water to fill the bulb. As the air in the tube cooled and contracted the water was drawn into it, and any subsequent changes in temperature caused the water to rise and fall in the tube.

Petrol was used instead of water and mercury in a registering thermometer designed by Daniel Jean Richard of Switzerland, between 1665 and 1741. A glass tube was filled with petrol and each change in temperature, amplified by means of levers, was inscribed upon a revolving drum, thus designating the change hour by hour the day through. Mercury, or quicksilver, first came into use in thermometers about 1709, and the first indicator of this kind, like the one ascribed to Galileo and others, was quite crude. This, however, was the beginning of the present day instrument, for the sensitive qualities of quicksilver permitted an accurate register of slight changes, where petrol, water and the rest refused to register at all.

The development of the thermometer was not slow after this. Perfect thermometers were to be had a century or more ago, and very unusual instruments still exist which tell of the genius of the early thermometer makers. Among these was an instrument built in the Eighteenth Century that worked in co-operation with a clock and a barometer in the Palace of San Donato, Florence.



Drawn from an old print by Edna Hood Lissak

Daniel Jean Richard, an Ingenious Native of Switzerland in the Sixteen Hundreds, Invented a Registering Thermometer

An Unleavened Industry

FIFTY-ONE years in any business argues a degree of wide-awakeness beyond the ordinary. When the period terminates with an establishment comprising a quarter of a city block, the tactics employed merit genuine interest. Augustus Goodman began baking matzoths in Philadelphia back in 1865. At that time the crackers were used only during the Passover, and the capacity of the establishment was but 110 barrels of the flour. In '81 the proprietor moved to New York and opened a small place with his brother, Isaac, on Avenue B. The first year's business showed a consumption of 550 barrels. The present premises were occupied in small part by Mr Goodman within the next seven years, a one-story addition being required two years later. The present Seventeenth Street frontage was acquired by A Goodman & Son in '92, and after five years three three-story buildings had to be secured opposite on Sixteenth Street. A further spacious addition is under way at the moment.

Photographic Bureau of The New York Edison Company

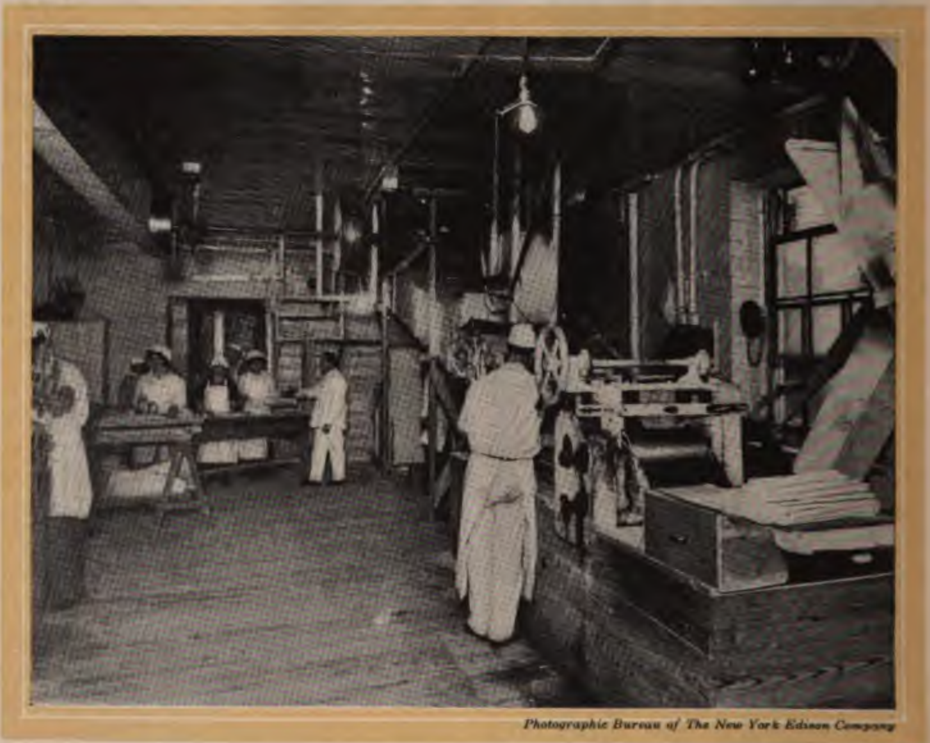
Motor-driven Moving Belt Bringing the Matzoths from the Ovens

Needless to remark, progress in the early days of the business consisted in the quality of hand work rather than in the employment of this or that mechanism. However, with the development of motor power the firm at once recognized its application and electrical devices were installed as rapidly as their respective merits became apparent. In several instances special apparatus has been designed by the company itself. The consequence is seen in a daily output of a quarter of a million matzoths with immense quantities of noodles and spaghetti. For city delivery alone use is made of nineteen horse-drawn and five motor-driven wagons.

So modern in every way is the electrical equipment that matzoth dough, from the time of its mixing until it finds itself baked and in boxes, is handled altogether by machinery. The flour is sifted mechanically in a big piece of apparatus on the top floor. A further device automatically feeds stated quantities through a chute to a mixer below stairs.

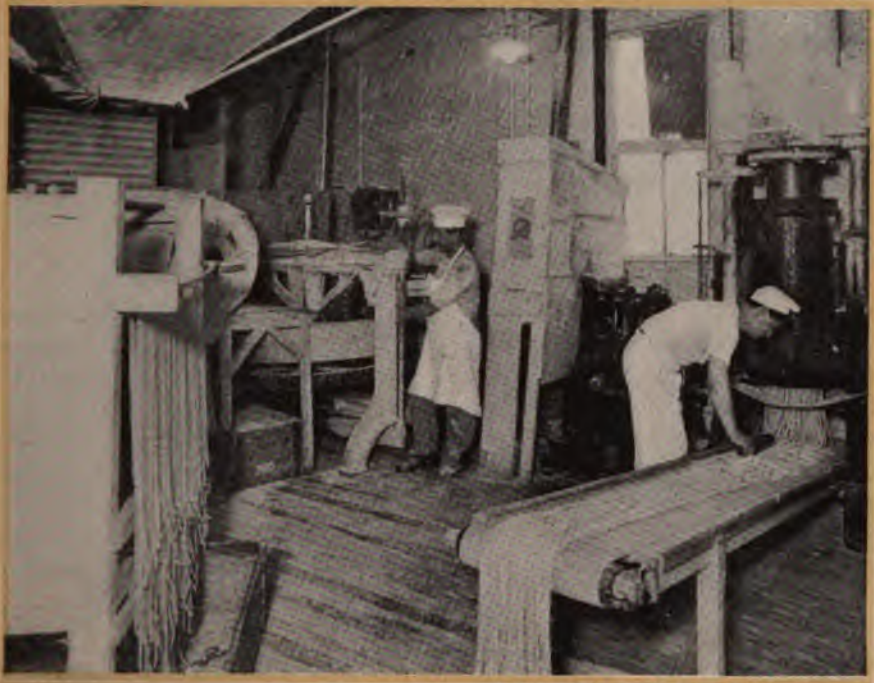
Matzoth dough is composed solely of flour and water. The mixing takes place in a capacious cylinder on a shaft fixed to which are heavy blades after the manner of concrete mixers. The necessary kneading, work calling for a succession of machines, starts with a big revolving steel pan communicating with the mixer and passing with its contents under a deeply grooved weight. Impressions from this weight reach practically to the bottom of the mixture, which is shifted continually by an attendant to be grooved again in the machine. On emerging, the dough is a good inch and a half thick. Succeeding kneaders in immediate series work to reduce this thickness which finally becomes that of the proverbial bee's ear.

At this point the endless band of dough finds itself on a moving belt headed for a cylinder studded with spikes that perforate it at close intervals for the release of the air in baking. A second cylinder displays circular cutters of the desired size. With the superflous dough snatched off after cutting, the belt with its burden proceeds into the ovens that reach a good hundred feet to termi-



Photographic Bureau of The New York Edison Company

The Matzoth Dough, after Mixing, is Run through a Series of Rollers by which it is Reduced to the Desired Thickness



Photographic Bureau of The New York Edison Company

The Spaghetti, after Forming, is Cut off in Strips and Hung up to Dry. Special Enclosures are Provided for Drying in Large Quantities

nate in an adjoining room. The newly baked cakes here find themselves on another belt that carries them into waiting boxes which in turn are enveloped mechanically in the firm's well-known wrapper.

In the making of noodles of the better quality, a considerable proportion of beaten egg is added to the flour and water. Mixing occurs as already described, with the dough mass worked again and again to the noodle thinness. Drying, of course, is substituted for baking, and long sheets of the dough are seen on racks in the breeze of electric fans. The cutting into noodles is done by motor-driven devices. Such is the demand for the product that three big package-wrapping machines are constantly in operation.

An allied output, spaghetti of various sizes, is formed in heavy hydraulic presses through the moulds of which the dough is forced in endless hollow strings to be cut off at intervals for easy handling in drying. This is done in home-made but very effective enclosures fitted with extensive revolving racks. The numberless bars of this apparatus filled with flying strings of spaghetti present a spectacle suggesting nothing recallable on land or sea. In use also are other enclosures subjected to an even temperature and equipped with electric fans for the readier distribution of the heated air.

Housekeeping by Wire

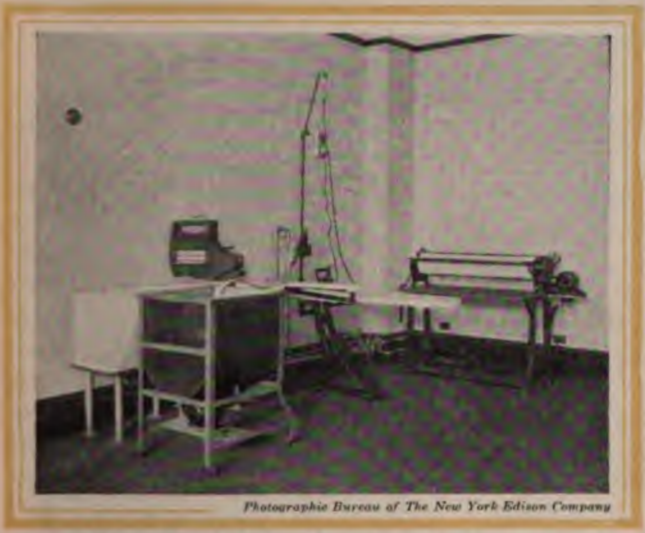
A FEW weeks ago, the manager of a New York store dealing in electrical goods was surprised to receive a visitor from the far-away country of Greece. When the traveler stated his business, the merchant was still more taken aback, for the Greek had come to secure the shipment to Athens of a large quantity of electric household devices. The goods under consideration included washing machines, vacuum cleaners, and a liberal assortment of the smaller and more generally used electric cooking appliances.

The customer explained that he had been sent to America by one of the largest Greek importing firms to arrange for the transportation of certain goods now wanted in Athens and at present obtainable only in the United States. Chief among the desired wares were what the Greek called "American household luxuries," which were being demanded by Athens' new "war millionaires," for shipping and selling supplies to the Allied forces had created suddenly a group of new merchant princes who were building fine mansions for themselves. In these houses the washing machines and vacuum cleaners were to be installed. On the other hand, the electrical cooking appliances were designed for a much more humble class of inhabitants. In Athens, it seems, the price of coal for cooking is practically prohibitive, and previous to the war Athenians were accustomed to importing electric cooking devices from Germany. Now they are obliged to come to this country for supplies.

This instance has been related at

Photographic Bureau of The New York Edison Company

The Electrically Equipped Wagon is Simplifying the Servant Problem



Photographic Bureau of The New York Edison Company

The Modern Household Laundry Equipment. Electric Current does the Heavy Part of the Work

some length not only because of its interest, but also because, oddly enough, the trend of development in distant Greece parallels the situation here in New York City. The past few years have seen an enormous growth in the manufacture of electric household apparatus, and as is the case in Athens, the demand comes from two clearly defined sources. There is the call for the larger and more expensive apparatus for homes of wealth where complete staffs of domestic servants are maintained, and on the other hand, need for the smaller appliances in homes where there are no servants at all.

The appeal of electrical devices in these two very opposite situations is easily comprehensible. An intelligent woman managing a household, servantless either by choice or necessity, sees the advantage of getting the utmost effect out of her efforts; time and labor saving become valuable considerations, because the intelligent woman knows that her time and labor represent a certain market value.

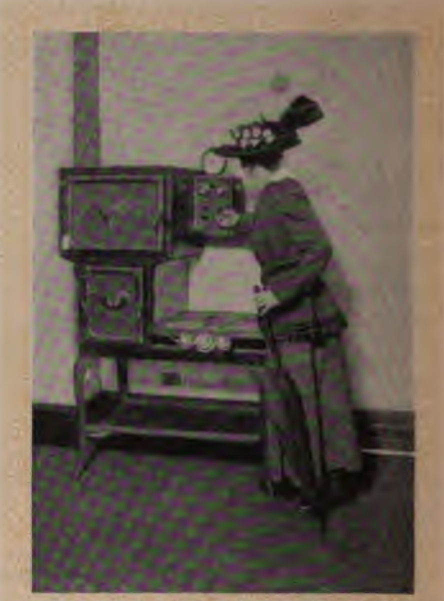
In the more elaborate household, a slightly different argument leads to the same result. There the standards of living are so high and the actual amount of work to be done is so great that it is practically impossible to have the numerous tasks done swiftly and well, unless the servants are given the proper tools.

To turn to practical considerations, what are the tools that have already begun a revolution in the technique of household management? Some, such as vacuum cleaners, electric irons and the small cooking utensils are already so well known as to need no further mention.

Washing machines can scarcely be called new any longer, but the last few years have seen the development and perfection of the original designs, and a reduction in price. They may be had now even in types designed just for a family of two. The machine ironer, or mangle, is a device which is being perfected in styles suitable for household needs, while a novel form of cleaner is the dishwasher. Of this very useful apparatus several types have been developed, and the larger sizes are being used successfully in some of the city's best known hotels. It should be only a matter of a comparatively short time when household dish-washing machines are as common as vacuum cleaners.

Of these latter, hardly more need be said than that each succeeding year finds them better adapted to ordinary home manipulation and more reasonable in price. Other motor-driven appliances deserve mention. Of the smaller kind, none has developed greater usefulness than a little mechanism, originally designed as a drink mixer. At the soda fountains where it first appeared, it was soon discovered that the implement could also be used for beating eggs, and then small restaurants and adventurous housewives began gratifying experiments with this unassuming tool. Equally versatile but on a larger scale, is the "power-set," so called, really a motor arranged for attachment to any moderate sized freezer, mixer, grinder or similar device, usually operated by hand.

The Vacuum Collects and Removes the Dirt Instead of Scattering It



Photographic Bureau of The New York Edison Company

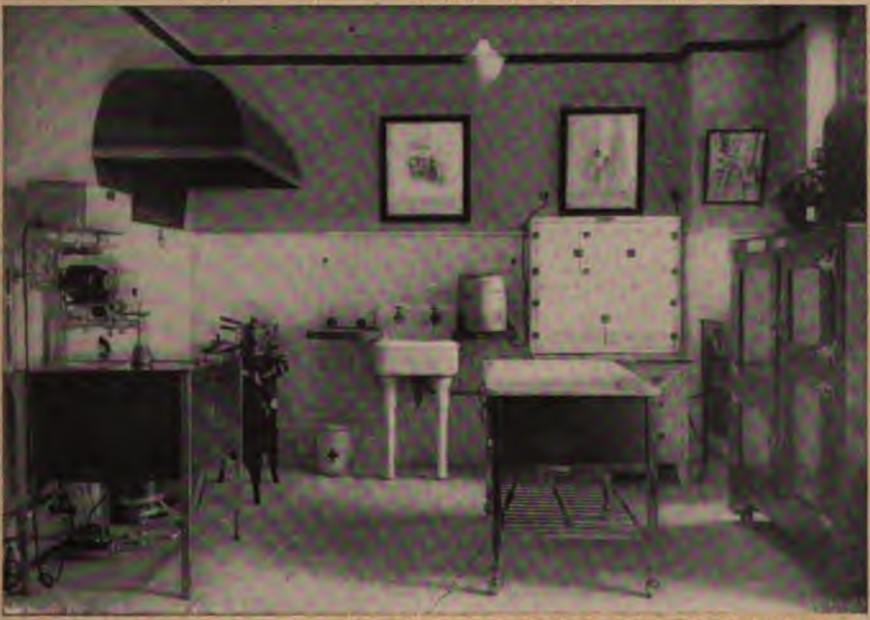
Electric Range Combining the Features of a Fireless Cooker

Coming to the field of electric cooking, several innovations should be noticed. First comes the expansion, figuratively speaking, of the smaller appliances. Using the same heating units, these are now supplied with a much larger and better planned assortment of pans, dishes, and even of small removable ovens. Thus equipped, a hostess can, on one small electric grill, produce all the courses of the most formal luncheon menu.

The application of electricity to the "fireless cooker" principle is receiving more and more consideration. In this arrangement the necessary original heat is supplied by current, which is then automatically cut off. Separate ovens built on this pattern are now made which can be operated from a lamp socket.

Possibly the latest attempt to retain the labor-saving advantages of electric cooking on a large scale, and at the same time to reduce its cost, may be seen in the combination gas-electric range. This interesting novelty is equipped with a "fireless-electric" oven while gas is retained for the burners at the top of the stove. It is too soon to speak authoritatively of the merits of this device. Certainly, however, it promises well. Of electric refrigeration for household purposes, one can now say that it is a fact. Machines to accomplish this work are now being produced, and it is said that the manufacturers are still busy supplying the advance orders for their machine. Like other electric power devices, the arguments for it include cleanliness, convenience, and low operating cost. As a medium of refrigeration it possesses two special advantages, the extremely small temperature variation, impossible to secure with melting ice, and the fact that the machine also produces ample ice for table use, about twenty pounds in the course of twenty-four hours.

Indeed the modern housewife is faced with an embarrassment of riches where electric appliances are concerned, and one great difficulty lies in deciding where to begin. The best plan is for the prospective purchaser to study her own situation and discover where its weakest spot lies. Undoubtedly she will find some machine designed to overcome that particular difficulty. And that is the point at which she should begin the electrification of her housekeeping.



Photographic Bureau of The New York Edison Company

The Modern Kitchen, with Electric Washing Machine, Stove, Water Heater, Cabinet, Warming Table and Refrigerator

Manufacturers and Agents (Continued)

Heating and Cooking (Concluded)

Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Motors

General Uses

Allis Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Mad Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building, Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St

Refrigeration

Automatic Refrigerating Co—30 Church St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Mad Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—1790 Broadway
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St
Wertheimer Sign Co—558 W 36th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—256 West 55th St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl, 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 B'way
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—30 E 42d St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Ave
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James—119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—30 E 42d St
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden) 119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cadillac —46 E 41st St
Home Devices Corp (Modern)—Bush Term Bklyn
Hurley Machine Co—147-157 W 42nd St
Kandem Electric Co Inc—49 E 21st St
National Sewing Machine Co—290 Broadway
Sibley Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Construction Company
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 444—Russell & Co
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Fifth Ave 75 —H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Electric Company
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Electric Contracting Company
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Electric Construction Company
West 31st St 109—Jandous Electric Equipment Company Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—New York Electric Installation Company
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Manufacturing Company

Electrical Requirements for the Manufacturing of Laundry Supplies

Laundry Machinery

Service	Required H P
Extractors	1-5
Cylinder washers	2 to 5
Wringer	1 to 3
Starcher	0.5 to 2
Dampener	0.25 to 0.5
Mangles	3 to 10
Ironer	1 to 3
Extractors	3 to 5

Chlorinators

Chlorinators, 50 gal (10 to 15 washers)	2.75 K W
Chlorinators, 22 gal	2.2 K W

Feather-Cleaning Machines	Required H P
Renovator	1 to 7.5
Crusher, single	10
Crusher, double	20
Feather pickers	1 to 3
Mattress tufters	2
Cotton picker	1 to 5

Soap Machines

Service	Required H P
Sap melter	3
Large soap grinder	5
Small soap grinder	3
Roller soaping grinder	3
Large soap clipping machine	3
Small soap clipping machine	0.75
Soda ash mixer	0.5
Soda mixer	4
Soap slabber	1
Soap press	1
Large soap mill	35
Medium soap mill	27
Soap plodder	7.5
Cutting table	0.75
Color mixer	0.5
Soap Clutch	2
Horizontal plodder	1.5
Perfume mixer	0.75
Tallow mixer	4
Large soap clutch	20
Small soap pump	1
Large soap pump	5
Drum washer	3

Department Stores that Sell Electric Appliances

Adams-Flanigan Co, Westchester & Third Ave, Bronx, Basement
B Altman & Co, 5th Ave & 34th St, 1st Floor —Notions
Barnett Bros, Col'bus Ave & 74th St, B'm't
*Bloomingdale Bros, 59th St & Third Av, "
John Daniell Sons, 759 Broadway, Basement
*Gimbel Bros, 6th Ave & 33d St, Fifth Floor
*J B Greenhut & Co, 6th Ave & 18th St, B'm't
H C F Koch & Co, 132 W 125th St, Basement
Lewis & Conger, Sixth Ave & 45th St, 1st Floor
Liggett-Riker-Hegeman Drug Stores
*James McCreery, 5 W 34th St, Sixth Floor
*R H Macy & Co, B'way & 35th St, Bas'm't
Rothenberg & Co, 34 W 14th St, Basement
Stern Bros, 41 W 42d St, Fourth Floor
*John Wanamaker, B'y & 10th St, 7th Floor

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*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

Cooper Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Bklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Smith-Eldridge Co Agents) —39 Cortlandt St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey St Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent) —236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—Mt Vernon N Y (C & P)

Manufacturers and Agents (Continued)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Edison Thomas A Inc—141 Lakeside Avenue Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Mfg Co—165 B'way

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—527 W 23d St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42d St
Phila Storage Battery Co—American Building B'way and 58th St
Storage Battery Supply Co—239 East 27th St
United States Light & Heat Co—16-24 W 61st St
Willard Storage Bat Co The—228-30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303-305 Fifth Avenue
Hospital Supply Co The—53-55 5th Ave
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Av
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Bway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—30 E 42d St
Neel-Armstrong Co—2017 Fifth Ave
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 8th Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—5th Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St, 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 East 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 West 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 Broadway
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 West Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—1790 Broadway
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St
Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—1790 Broadway
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
H W Johns-Manville Co—Madison Ave & 41st St
Kandem Electric Co Inc—49 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 Broadway

Globes—Reflectors

Dealing William—1 Hudson St.
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42nd St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn, N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—1790 Broadway
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialties Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio

(Continued on last four pages)

The New York Edison Company

General Offices

Irving Place & 15th St

Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Spring 9890
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
*124 W 42d St	Bryant 5262
*151 East 86th St	Lenox 7780
*27 East 125th St	Harlem 4020
*362 East 149th St	Melrose 9900

*Open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts west of the Bowery and south of Catherine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street east of and including the Bowery, and north of and including Catherine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

64 Harrison Street

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Lewis B Gawtry, Secretary

New York's fire loss during 1915 was $5,757,018, a sum which, while large in itself, is small as compared with the losses of other years. For instance, it marks a reduction of nearly two and one-half million dollars as compared with previous year's loss, is less than half the loss sustained during 1911 and is $2,458,606 under the average loss for the past eighteen years.

The annual report of the Fire Commissioner is always full of interesting information. The 1915 report, among other things, shows the reduction of two and one-half million dollars in the city loss. It shows among the known causes of fires that carelessness is one of the leading elements, careless smokers adding $119,135 to the fire bill, while children who played with matches added $83,711. The careless use of matches caused losses of $225,806. Well down on the list appears the reference to electricity. Under the heading, "Electric wires, cars, defective insulation, etc," is indicated a loss of $80,465. In every instance the causes of the fires were determined either by self-evident conditions or by investigation.

These figures are the totals for the entire Greater City.

Interesting in itself, the report serves also to call attention to a recent report of the New York Board of Fire Underwriters which analyzes the various electrical fires occurring in Manhattan during the same period. There were 154 such fires, with a total loss of $68,993.08.

And here, as in the case of fires of various other origins, "carelessness" appears as one of the leading contributing factors. Carelessness on the part of workmen caused ten short circuits; the storage of inflammable material in close contact with incandescent lamps caused eight fires; the leaving of connected electric irons in contact with inflammable material caused twenty-seven fires. These three groups account for approximately, $31,000 of the total damage caused by so-called "electrical fires."

The Underwriters' report points out that of the total loss only $28,000 is chargeable to electrical equipments, which were supposed to be in a safe and satisfactory condition, whereas, $40,433.43 is chargeable to new electric equipment, or additions and extensions made to original equipments, without the knowledge or approval of the Underwriters, this last being highly suggestive of the work of the amateur electrician, and his readiness to "take a chance."

Another fact which stands out prominently in the report is the relatively slight loss in each of these electrical fires. The average is less than $450. Six fires caused by sparks from commutators of motors caused a loss averaging only $110 each; a fire caused by sparks from opening a switch did $5 damage; the ignition of films in motion picture booths occurred eight times for a total damage of $130; short circuits in the field and armature coils of motors caused, although it happened fifteen times, a total damage of only $792. In other words, these electrical fires were confined, with but few exceptions, to the point where they originated. They were easily detected and located and readily extinguished.

The two reports, that of the Fire Commissioner and that of the Board of Fire Underwriters, are extremely interesting in themselves. They are doubly interesting in that they show most convincingly that electricity, either in the home or the commercial establishment, is the safest and most dependable element available for domestic or commercial light, heat or power.

◆

This country perhaps does not rank as the leading silk producer of the world. Indeed to associate the United States and silks is to suggest a lavish purchaser rather than a prodigious producer. Yet the fact remains that America ranks with the foremost nations in the manufacture of the product of the silkworm. To China, Japan and Italy must be accorded first honors as producers of the raw material. It is in these lands that the worm spins his cocoon. But it is on this side of the seas that the lustrous strands acquire their commercial value.

By example. The imports of raw silk during 1915 were valued at something less than ninety-two million dollars. As to the value added by manufacture the reports are not all in yet, but it is generally agreed that for the corresponding year the finished product will represent in round numbers a value of three hundred million dollars.

In other words, the silk mills in America add two hundred and ten million dollars to the value of the raw products that are brought from abroad.

Yet until within the past two years this country was content to devote its energies to the manufacture of the lower grades. Material of finer texture and pattern remained exclusively the product of the European mills.

The war has changed this. With the overseas source of supply shut off, American manufacturers assumed for themselves the task of producing silk that should rival in every way the best from the looms of France and Italy. There is ample evidence to show that they have succeeded, and today American silk mills are turning out a fabric that equals in every way the best that was produced abroad.

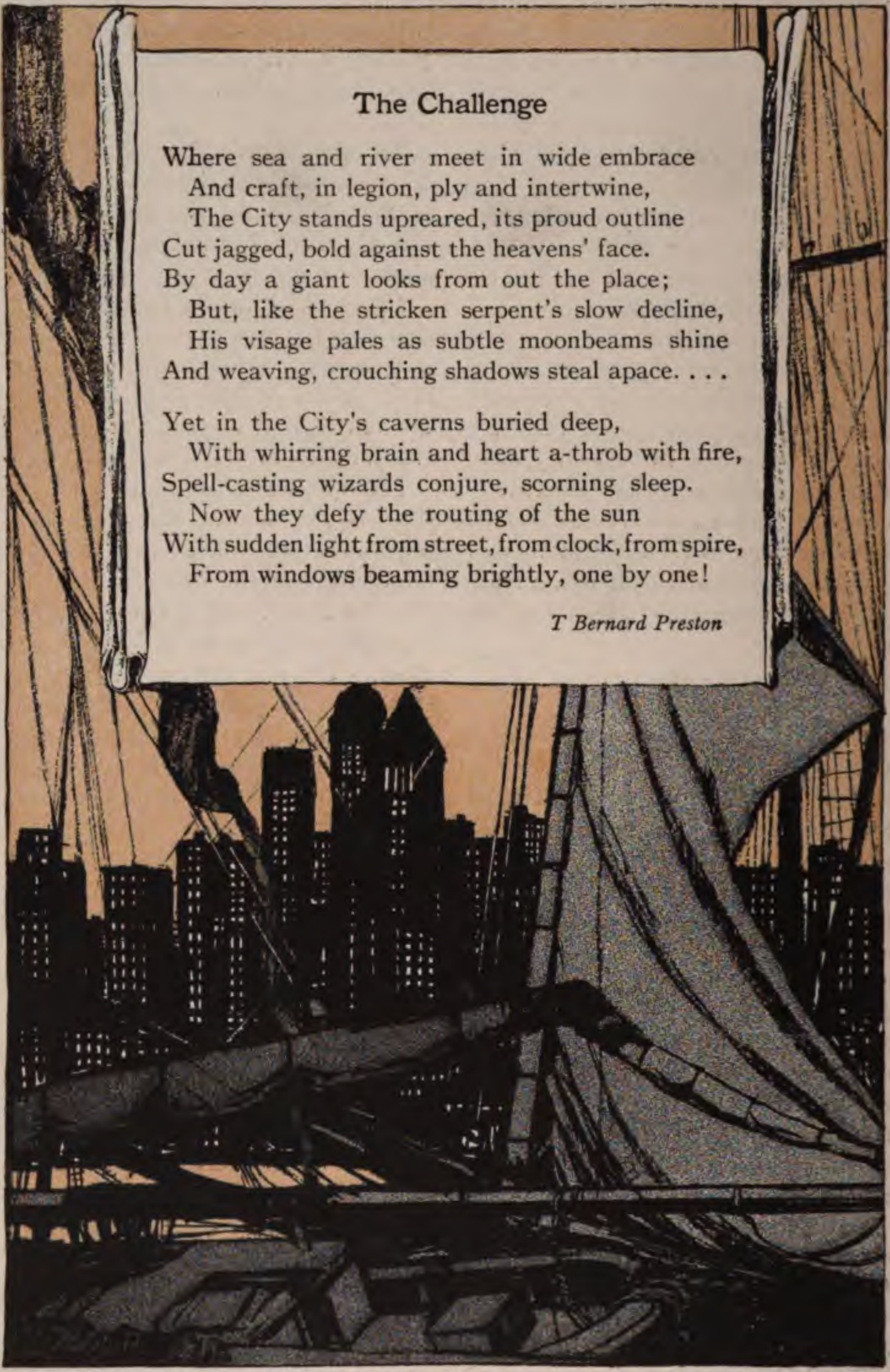
It is the privilege this year of The New York Edison Company to show on a fairly comprehensive scale certain of the phases of silk manufacture in America. Silk looms and accessory machinery, from the Mallinson mills, form part of the Edison industrial group at the annual Electrical Exposition, weaving a fabric of remarkable quality. This exhibit speaks eloquently of one phase of American industry. And since electric motors drive the looms, the exhibit shows too that in the exacting art of silk manufacture electricity is destined to play a leading part, a part that will grow in importance, with the increasing demand that already has been created.

The Challenge

Where sea and river meet in wide embrace
And craft, in legion, ply and intertwine,
The City stands upreared, its proud outline
Cut jagged, bold against the heavens' face.
By day a giant looks from out the place;
But, like the stricken serpent's slow decline,
His visage pales as subtle moonbeams shine
And weaving, crouching shadows steal apace. . . .

Yet in the City's caverns buried deep,
With whirring brain and heart a-throb with fire,
Spell-casting wizards conjure, scorning sleep.
Now they defy the routing of the sun
With sudden light from street, from clock, from spire,
From windows beaming brightly, one by one!

T Bernard Preston



Decoration by C B Falls

Yorkville Days

WHILE New York, like many another metropolis, has grown from a combination of villages, it has managed with curious concern to disguise the fact. So compact and co-ordinate is the modern town that few indications survive hinting the original hamlets scattered over the Island. In the lower city such landmarks for the most part have long since disappeared. Uptown, in what was once Yorkville, isolated mansions of village days still stand here and there, their capacious wings and inviting porticos suggesting the hospitable record of their prime.

When Manhattan settlers came gradually to scatter north of the protecting fence, now Wall Street, among the hamlet groups to move to some distance was this same Yorkville. With its centre on the Boston Post Road as the old five-mile stone at Third Avenue and Seventy-seventh Street still testifies, the community developed readily into one of the more attractive suburbs. From the earliest accounts the Yorkvilleites appear to have been English, names like Lawrence, Clinton, Prime, and Paulding showing on the original record. The village at first covered the ground now bounded by Eighty-third and Eighty-ninth Streets and Third and Second Avenues. However, as it spread, its boundaries extended from Fifty-fifth to One Hundred and Fifth Streets and from First Avenue to the East River.

Within this area was the celebrated Jones' Wood that sheltered the most thriving smuggling resort on the north coast. Strangely enough, the Wood was the proud possession of the Provoost family, one of whose members was not only President of Columbia College but first Bishop of New York. David Provoost, a cousin, was of somewhat different bias. Indeed, he appraised the Wood at its full value and forthwith embraced the smuggling profession. They do say that he successfully defied the law to the end of a long and animated career, expiring at the discerning age of ninety.

John Jones, perchance the original, to whom the property was sold converted the wood and its famous Dead Man's Cave into what was known as a "retreat of charm for pleasure seekers." So abrupt was the contrast that the Provoost vault, cut deep in the rock here, fell presently into ruin. To complete the irony, a brewery of great delectation to visitors at the woodland was built over the very cave where the smugglers secreted their private stock.

The Old Yorkville

Yorkville in the old days seems to have been the Tuxedo of the well-to-do. Here the more prominent families of the Island developed handsome estates, while many well-known but less prosperous characters eked out an existence in the village, weaving their activities into its picturesque history.

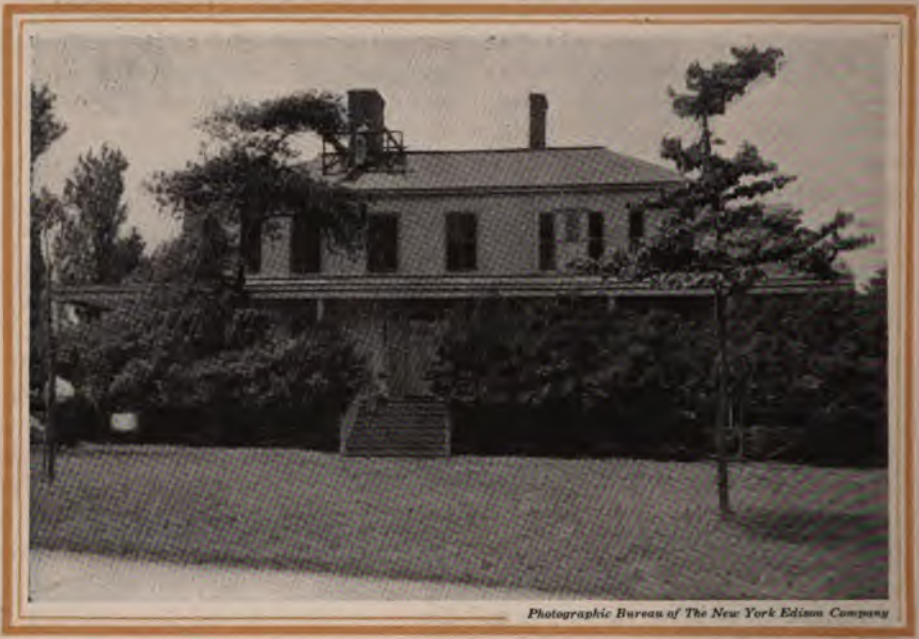
At Eighty-second Street and Avenue B stood the country house of

Joshua Jones. This was a long, wooden structure with a gallery on the roof and the customary verandas at front and rear. Two blocks above appeared the Schermerhorn homestead, an ambitious structure of two and a half stories surmounted by a cupola from which a generous view was obtained of Hell Gate and the Islands. Neighbors to the Schermerhorns were the Winthrops, the Dunscombs, the Kings, the Wilkses, and the Hoffmans, while one John Grenzebach made enough from his Park Row grocery to settle in the immediate vicinity.

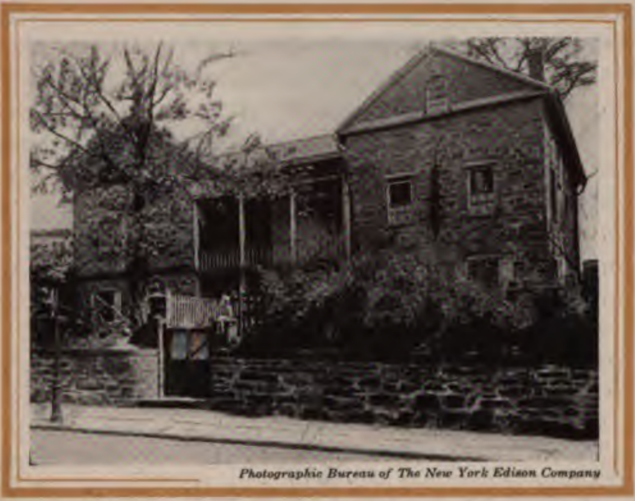
The John Jacob Astor house, along the last of its story, gave few tokens of ever having been inhabited. Records, rather than what remained, told of a big square frame building with an extension at the rear. Above the great door of the hall showed a window of corresponding size flanked by two smaller windows. Four fluted pillars supported a wide porch, the lawn opening in front toward the water but closed at the rear and sides by trees and bushes.

Two blocks from this site stands yet the Nathaniel Prime house. Prime, a great banker, lived when in town in a stately mansion at 1 Broadway. The country house, which looks across Hell Gate, is a model for suburban homesteads, with broad verandas at front, sides, and rear sheltering its rooms from sun and wind.

The venerable mansion overlooking the East River from a terrace at the foot of Sixty-first Street was built


Photographic Bureau of The New York Edison Company

The Old Prime House in the Present East River Park overlooking Hell Gate. The Mansion was a Noted Centre of Village Hospitality



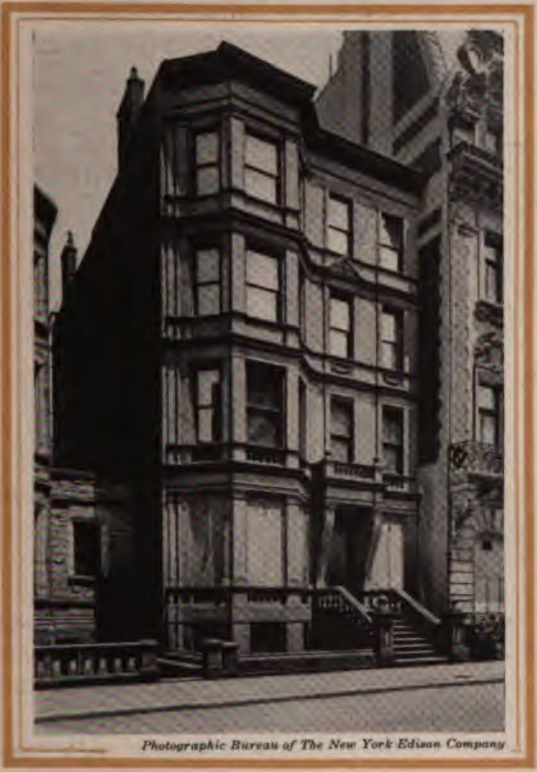
Photographic Bureau of The New York Edison Company

"Smith's Folly," at Sixty-first Street and the East River, a Residence once Considered Highly Pretentious

in 1799 by one William S Smith, a man of rapidly earned wealth and quickened social aspirations. No expense was spared till the roof was reached. Then, by unhappy coincidence, Smith's fortune itself stood exposed to the elements. "Smith's Folly," as the house was called, was bought and completed by M C Hart who opened it as a road house. Among those who visited "Smith's Folly" in the old days was Jerimal Towle, who, impressed by its quaintness and decorative richness, bought and converted it into a home. The house has since then been in possession of his family.

But a short walk from "Smith's Folly," west of the Post Road, is the brownstone house that proved the last home of General Grant. The house was bought by friends and presented to Mrs Grant soon after their return from Europe. Here occurred in the disease-harrassed writing of the "Memoirs" the most heroic struggle of the General's career.

By this time Yorkville as a distinctive vicinity had grown somewhat impaired.



Photographic Bureau of The New York Edison Company

The House on Fifty-seventh Street near Fifth Avenue in which General Grant spent his Last Days

Already had occurred a noticeable manufacturing trend toward the waterfront. Possibly in no other Manhattan locality did such development take place more rapidly. With the erection of factories rose the problem of homes for the workers, a difficulty solved by the putting up of a host of four and five story tenements.

While this change was in progress east of Third Avenue, the western section of the village came to be recognized as a centre de luxe for magnificent mansions. This enthusiasm seems to have culminated at the moment in the newest of Fifth Avenue apartment houses, the rentals of which range high in the twenty thousands.

The old Post Road, now know as Third Avenue, became the main street of the community. Farm houses gave place to stores, the infrequent horse car bringing the people together in common interests. With the improvement of transit, big retail stores sprang up, to be followed by theatres, clubs, banks, churches, and schools. The present transportation facilities with those under construction may be judged the final impetus in the remarkable development of a remarkable section.

In the early '80's electricity took its part in this advance through the laying of mains within the section. Indeed, as time has gone on, the generality of buildings have availed themselves of Edison Service. The presence of this dependable power in the factories of many types along the east thoroughfares witnesses, as nothing else could, the progressiveness marking the erstwhile village.

Photographic Bureau of The New York Edison Company

All that Remains of the once Famed "Dead Man's Cave," a Prosperous Smuggling Retreat of the Olden Time

Typographically Speaking

SO ancient, so distinctive and so highly specialized is the trade of the printer that there is small wonder these knights of the ink and roller have developed among themselves a language peculiar to their craft. Typographically speaking, there are any number of quaint and interesting words and expressions that mean absolutely nothing to a layman, but which express a great deal to master printers. "Quoin," is one of these words, and so are "quad," "pica," "pie," "stone," "chase," "slug," "cut," "bleed," and "make-up." Such terms are found in the printer's vocabulary and nowhere else.

Photographic Bureau of The New York Edison Company

During Seventeen Years' Service this Motor has cost its owner only $6.00 for Repairs

But of all this queer phraseology, perhaps the one that indicates less to the layman and more to the printer than any other is the word "furniture." Speaking of furniture, one naturally thinks of chairs, tables and similar objects, and consequently when it is explained that "furniture," in the language of the printer, is a collection of brass rules, long sticks, and thin lead strips, there is a feeling of disappointment.

However insignificant in appearance this "furniture" may be, it is of the utmost importance to the men of the trade, for without it neat and accurate work would be impossible. And again, in spite of its simplicity of design as it were, the aforesaid "furniture" is difficult of manufacture. Indeed, it would seem that a man to be able to make these brass rules, wooden strips, and the like must need even more training than the average cabinet-maker. First of all the "furniture" maker must be an expert printer, which requires from four to six years' training or longer, following which he must spend a like period learning the science of rule making before he can turn out an acceptable product.

To build printers' furniture a man must be able to deal in the minutest fraction of an inch; "points" the printers call these measurements and each point measures exactly one seventy-second of an inch. With such details to observe it is quite evident that more than ordinary skill and care are required to manufacture these apparently simple articles. The variation of a hair's breadth will make a brass rule useless, and the tiniest warp in a piece of wood furniture might, if not observed, spoil in the making thousands of dollars' worth of printed matter.

So demanding of skill and accuracy is the work that there are few men in the country who have undertaken to produce rules and other similar "furniture" in quantity. In truth, there are only two firms in the eastern section of the country where these supplies are made, the most important of which is owned and operated by Frederic L Schley, a master printer, whose establishment in Beekman Street is on the edge of the famous "Swamp." Mr Schley's father started this flourishing business and trained the present Frederic Schley in the art. Today hundreds of printers' supply houses are looking to the Schley establishment for most of their "furniture."

Photographic Bureau of The New York Edison Company

Where the Difficult Work of Making Mahogany Blocks is Performed

The brass of which rules are made is of the very best quality and although the strips that are received from the brass foundries are said to be "crude," they are made so accurately that there is not the variation of one seventy-second of an inch in a pile of one thousand strips. Still, for all this accuracy the rule makers insist that the strips are in no condition to be used as rules and therefore they must begin shaping and finishing them into presentable "furniture." As mentioned before, the work of finishing the rules is so delicate that the makers are not inclined to trust machinery, preferring rather to do most of the work by hand.

First comes the

Photographic Bureau of The New York Edison Company

The Facing Bench. The Tiny Motor-Driven Saw to the Left is used to cut Finished Brass Rules

facing-up of the printing edge. This is accomplished on a steel-topped bench, by means of brass planes which have the general appearance of the planes used by carpenters. These planes are equipped with special tools for special "face" effects on a rule. One may produce what is known as a "hair line," while another makes a "two-point" line. Following this facing-up comes the delicate work of making these rules absolutely true as to thickness. This is done on a big, revolving emery board which is operated by a tiny electric motor. Special motor-driven saws are used to cut the brass rules to the proper size. Practically the same operations are required in making the wooden "furniture." The wood rules are all made of cherry and they range in thickness from about three points, or three seventy-seconds of an inch, to two inches.

Another form of "furniture" that requires very accurate and painstaking work on the part of the manufacturer is a product of the Schley establishment. This is an "electro" block, invented by the first Schley. It is being used in book printing establishments extensively. These blocks are made of mahogany faced with brass rules and contain tiny clamps which lock fast the electrotyped plates and make them ready.

Great boards of mahogany arrive at the Schley factory. These boards, carefully selected, must be without the sign of warp. The first process in developing them into "electro" blocks is cutting them down, by means of an electrically operated saw, to the desired size. The next and most delicate operation is surfacing which is done by an electrically operated revolving plane.

In the meantime expert operators of drills and various other electrically driven machines have been getting ready the brass facing and the cogs, ratchets and other mechanism, and by the time the piece of wood is ready the metal parts are completed too.

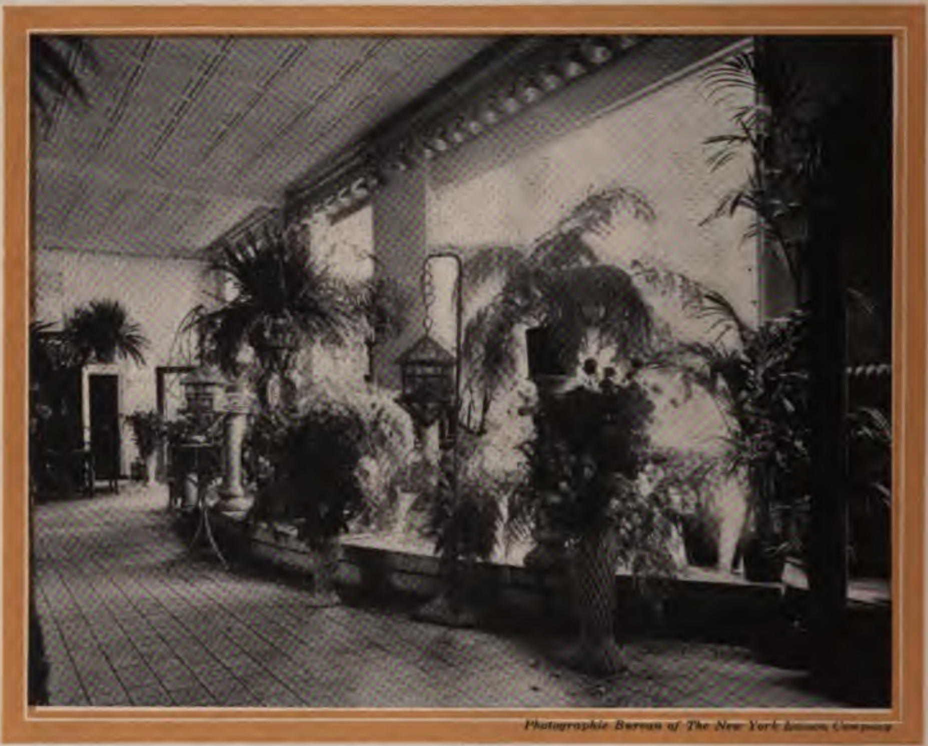
It is interesting to note in conclusion that wherever power-driven machinery can be used in the delicate work of making printers' "furniture," Mr Schley has been careful to install motors, securing the current from the Central Station.

Photographic Bureau of The New York Edison Company

A Lathe and a Finishing Machine in Action

A "Small" Bit of Outdoors

THE showing of goods in surroundings suggesting their use is an idea not altogether new to the florist. Long before the notion was taken up by business in general, the flower shop, by means of backgrounds of appropriate color, a bit of wicker, and a cast or two framed its offerings in a setting far removed from the commercial. While the trend of late has furthered this idea and better known florists have studied to produce the terrace or conservatory effect, a development that may be called novel has been worked out in the new J H Small establishment at 505 Madison Avenue.



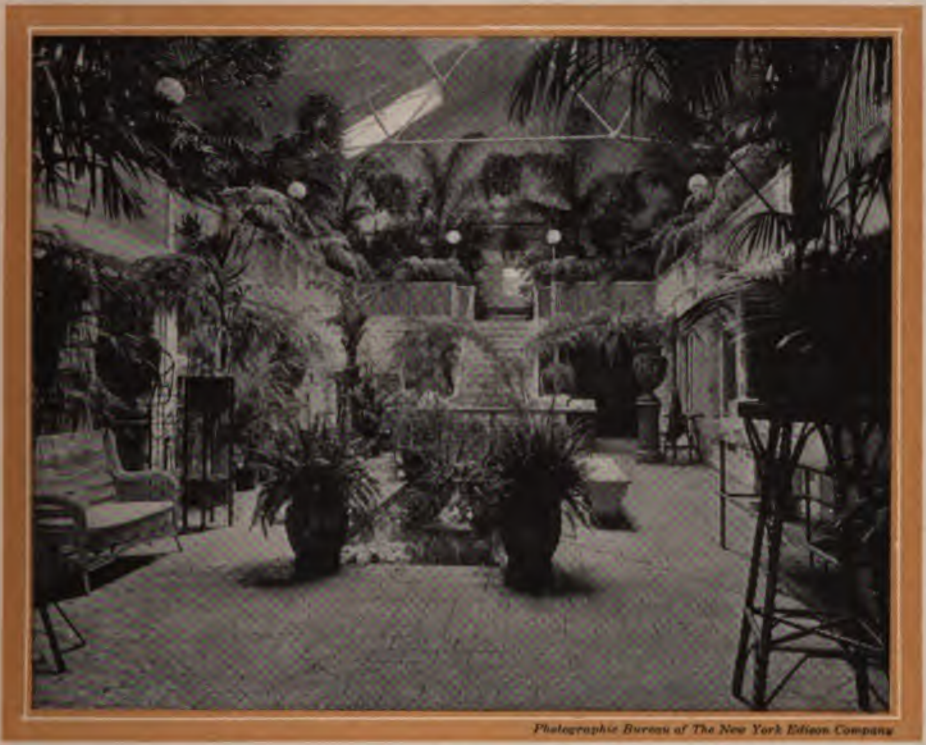
Photographic Bureau of The New York Edison Company

Lighted by Lamps using X-Ray Reflectors, the small Window Presents a Brilliant Evening Spectacle

The shop in impression and fact is a *patio*. Whatever use the building may have served in a former capacity, its story and a half lighted in the midst by broad skylights suggests the domestic courtyard of Spain or Italy.

First to be noted is an Italian fountain playing genially in a broad basin bottomed with smooth brook stones. Fed from the wineskin of a young Silenus, the basin supports a company of goldfish darting here and there in lively contempt of a pair of turtles that prefer loafing about among shells and mosses by the in-take.

The *patio* is fully realized in a quadrangle of balcony standing out from the mezzanine. Reached by a staircase at the back, these balconies with white railings and picturesquely grouped plants might themselves have been transplanted from a Palermo countryside. Adding in the realism with a note of pleasant formality, a succession of bronze standard lamps of Italian model appear at intervals along the balcony railing. With the all but unobstructed sky above and the green and growing quiet round about, the place is as exotic as the courtyards that inspired it.


Photographic Bureau of The New York Edison Company

Cornice Reflectors and Standard Lamps about the Balcony Rail Provide a Clear, Even Illumination

In no sense detracting from the picture, tall refrigerating cabinets characteristic of the progressive shop line the ground floor walls at the right and rear and reach upward to the balcony level. Due to the absence of conspicuous framework, these cabinets present through expanses of plate glass a contents resembling a hedge or wall of blossoms. In fact the courtyard beflowered to this extent might consider itself favored in any latitude. Bringing out the entire scene in artificial brilliancy, a line of electric lamps has been run in an inconspicuous reflector trough over the *patio* entrance.

A feature indispensable to the avenue shop is, of course, the show window. This in the present instance is fully in harmony with the rest of the place. Built as a broad half-moon, it resembles from indoors a stage with footlights across the back. Aside from a handsome vase or two, the outstanding feature is a giant urn of Greek design in the bowl of which, supported by graceful figures, shines a group of high-watt bulbs. In the rear of the window space as viewed from the sidewalk, this exceedingly beautiful lamp distributes an illumination upward and about, enhancing the displays around it.

In the open lobby intervening between street door and *patio*, white walls and ceiling, an abundance of palms and vines upheld by frames of green wicker, and cut flowers springing from vases of plaster and pottery, lend a feeling of out-of-doors-iness usually attempted but not always effectual. A diminutive office of rustic suggestion appears in this quarter in the guise of a recess becomingly set off by white lattice work and greenery. The use of Edison Service throughout the establishment testifies to the success of Central Station supply for purposes of delicate and continuous effect.

Photographic Bureau of The New York Edison Company

The Greater Part of the Crew Descends to the Slow Task of Scraping Barnacles when a Big Ship Enters Dry Docks

Hull Cleaning by Motor

A BATTLESHIP whose hull is covered with a thick coating of barnacles is like a manacled pugilist whose trained weapons of offence have been rendered useless. In warfare upon the sea the inability of a ship to execute necessary movements with swiftness and precision may neutralize the advantage possessed over an enemy by stronger protective armor and heavier armament, and possibly result in its own destruction. Its very life, therefore, depends to an incalculable extent upon its freedom from any conditions which may hinder the prompt and effective handling of the ship. Among these is the inevitable accretion of animal and vegetable growth which occurs during cruising operations, finally constituting a serious menace to the efficiency of the ship, if the latter remains in commission for a long period without being dry docked.

A case in point is the South Dakota, an armored cruiser of fourteen thousand tons, which, when dry docked some years ago at the port of San Francisco, was found to have been carrying in addition to armor and equipment, six hundred tons of barnacles that had accumulated upon the sides and bottom of the vessel during a seventeen months' cruise covering a distance of 30,000 miles. Some of the barnacles, which were found adhering to every foot of the ship's bottom, measured three inches in length by two and three-fourths and two inches in breadth and thickness, while the average depth of the marine growth is said to have been two inches. The effect of all this added weight had been to raise the coal consumption during the latter part of the voyage from 100 to 133 tons per day, and decrease the number of miles which the cruiser was able to travel upon one ton of coal from 2.9 to 2.1, although the economic loss and decrease in rate of speed was doubtless in part due to the fouling of the propeller from the same cause.

Reproduced from the Scientific American

This Motor-Driven Brush, Held Against the Vessel's Hull by the Action of a Propeller, Saves the Need of Docking

The removal of barnacles from a ship's bottom is no lightsome task, and by old methods calls for the labor of a large portion of the crew whose services may be required for other duties. The cleaning of the South Dakota, for example, occupied 175 men an entire day. Evidently any device by which the same or better results may be accomplished without the necessity of dry docking, in less time and with the aid of a small number of men, must be of great advantage to the battleship or cruiser, and for the merchantman, effect a considerable saving. With the application of electricity to the problem there have come into existence several types of ship-cleaning apparatus which have removed the difficulties attendant upon the former methods.

The chief difficulty lay in applying the brush to the ship's hull with sufficient force to remove the tightly-clinging barnacles. The old hocking brush would scrape along the sides, working when it was convenient, and shirking the labor of removing the more tenacious particles. In electrical scrubbing gear the requisite force may be applied in several ways. An earlier form of apparatus, a description of which some readers of this magazine may have seen in the *Scientific American* a few years ago, consists essentially of a series of brushes and magnets, carried on battens, and separated by cork disks, the whole constituting a mat. This, by means of attached chains, a hawser and steam winch, is dragged back and forth under the ship's hull. As the mat is lowered into the water the magnets, for which current is supplied by the ship or by a special tender, grip the iron sides of the vessel and when the hauling begins the brushes, set diagonally upon the battens and between the magnets, travel fore and aft, scraping the surface of the plate and removing the accumulated matter. "An 18,000-ton battleship can be completely scrubbed in twelve hours, and vessels dry docked after being cleaned by this method have been found to be entirely free from any marine growth." Since the operation may be performed by two or three men and the cost of cleaning is in consequence low, the aggregate saving by the general employment of such apparatus would be considerable.

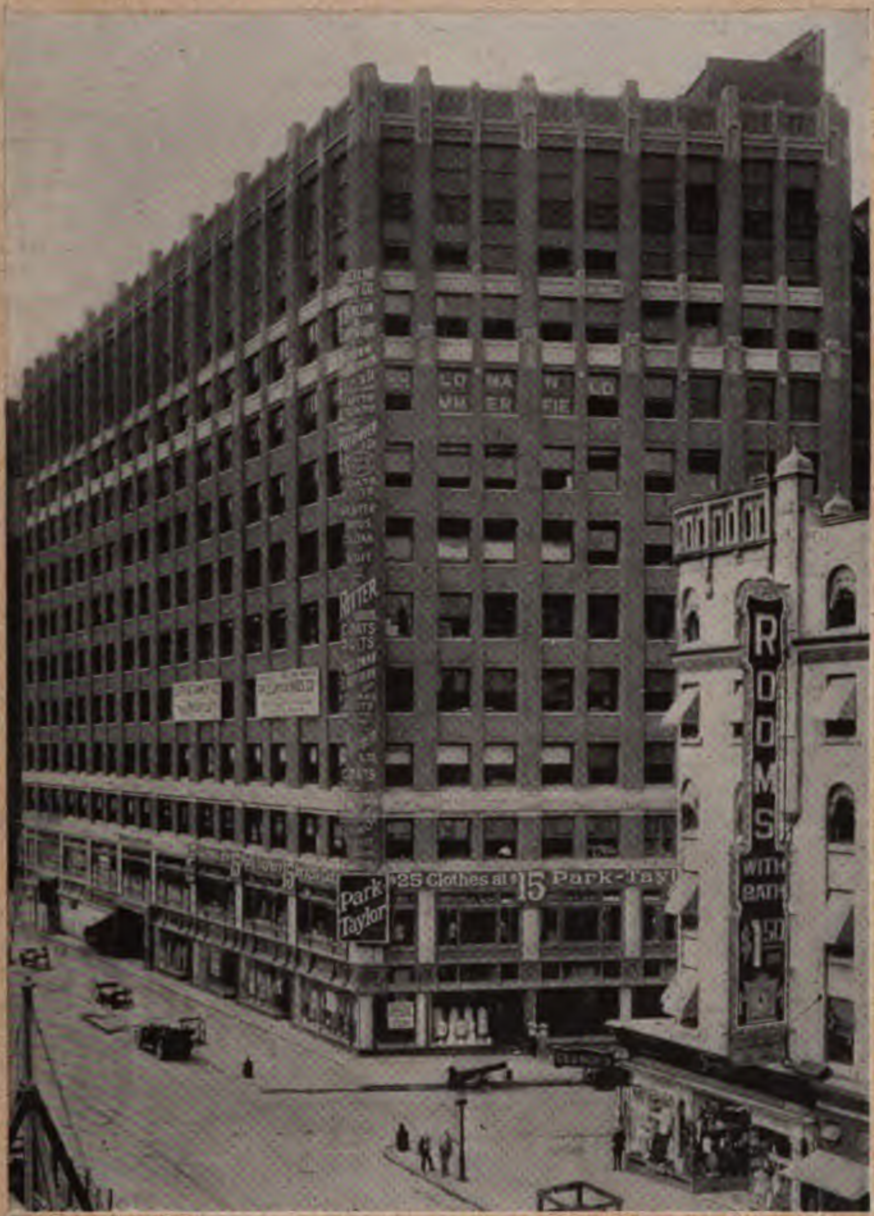
Another more recent invention achieves the same results, also without the necessity of dry docking, but requires the use of a small flat-bottomed barge, and employs an entirely different principle. The barge is motor-driven and carries the cleaning apparatus. This consists of a brush five feet in length and one foot in diameter, a submersible motor and a propeller, all mounted on a metal frame which by means of a derrick is swung overboard and into the water alongside the ship whose hull is to be cleaned. The propeller, driven by the motor, forces the revolving brush against the vessel, and as the cleaning gear is lowered the barnacles are removed in vertical strips five feet in width, corresponding to the length of the brush. As each strip is cleaned, the barge is moved forward four feet, thus allowing a one-foot margin and insuring a thorough operation. This process, which is probably as effective as the preceding and can readily be performed at small cost, is the invention of an Australian.

Here and There

Electricity has been making great strides in India. Local electric works advertise to furnish current not only for lighting but for mechanical uses. A big future is seen in the domain of the small engine. These engines are especially employed at present in the grinding of flour made of wheat and millet of which the native *chapatties* or cakes are made.

Gramophone records are now being made which reproduce the Morse signals as they appear in the microphone of a wireless receiver. These records commence with the simple Morse code and pass on to dummy messages, including figures, fractions, Stock Exchange terms, and other items of importance in the commercial and financial world.

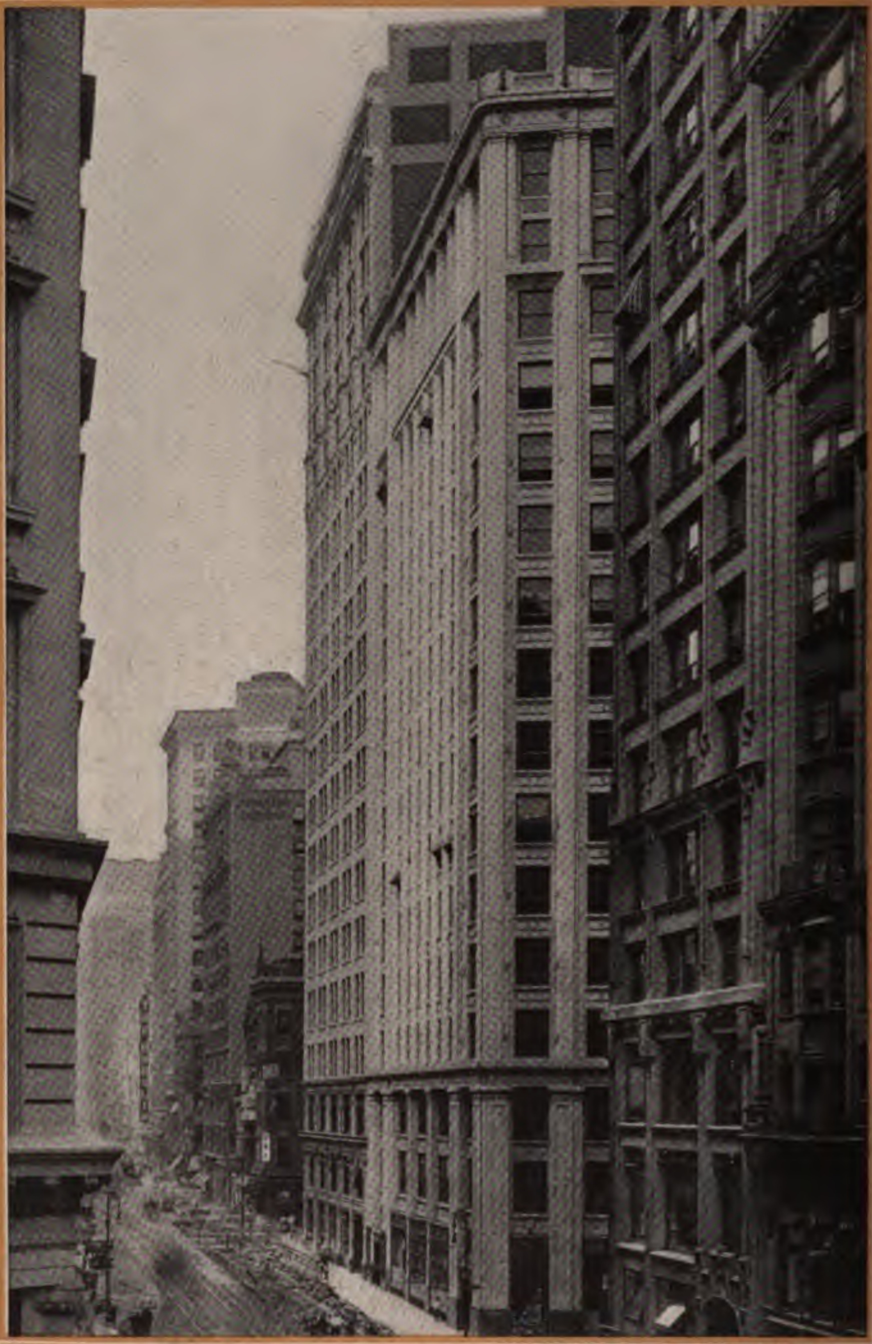
In a recent copper ore test of a new electric smelter at St John's, Newfoundland, a high grade of copper was produced. The plant has a capacity of about 1,000 pounds of ore per hour.



Clinton & Russell, Architects
Thompson-Starrett Co., Builders

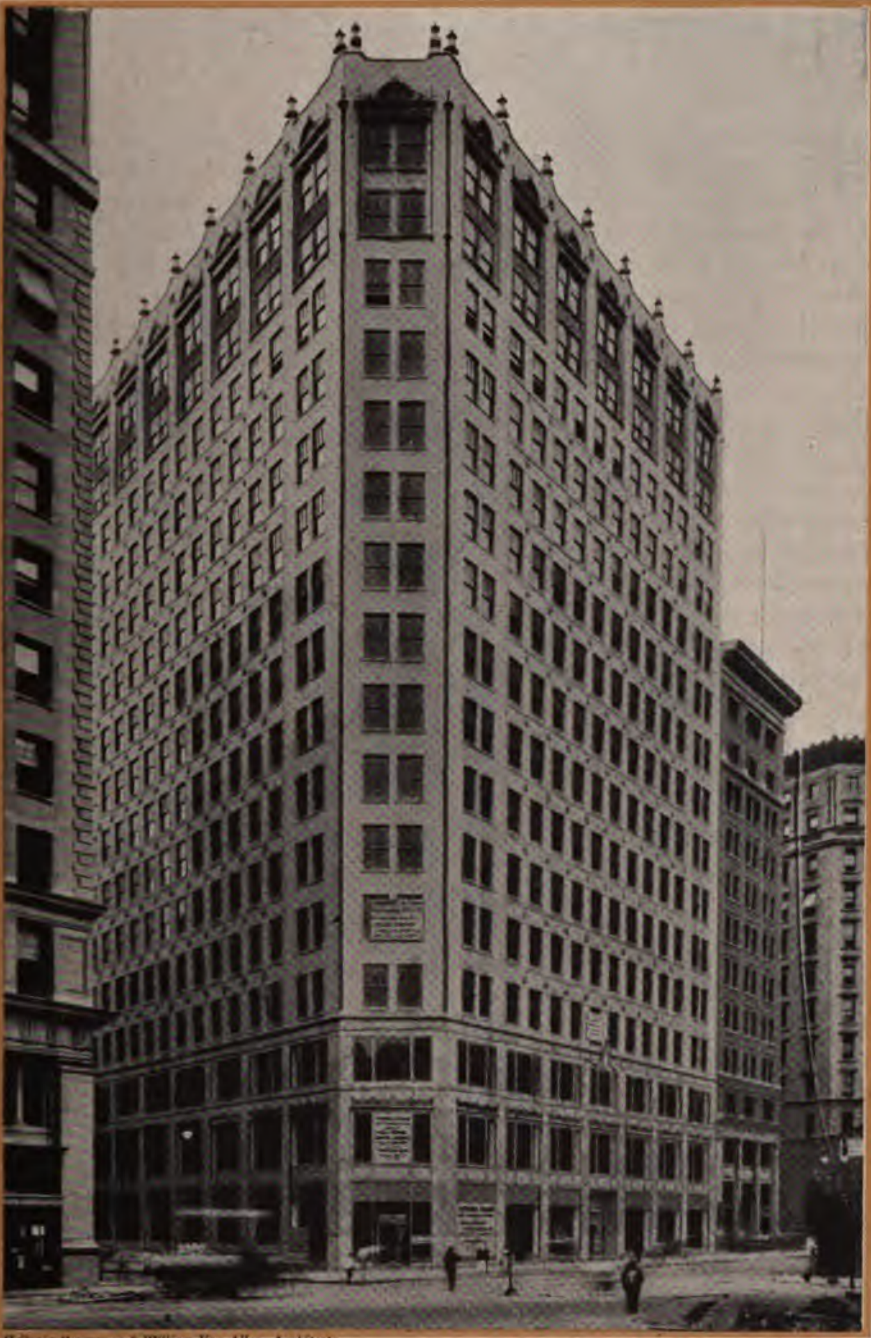
Photographic Bureau of The New York Edison Company

The Johnson Building Occupies the Entire Block Front on Broadway between Thirty-fifth and Thirty-sixth Streets and is Tenanted Exclusively by Mercantile Firms. This is One of the Newest Broadway Buildings of this type. It is Supplied by The New York Edison Company



Photographic Bureau of The New York Edison Company

The Victoria Building at Broadway and Twenty-seventh Street was designed by Schwartz & Gross and erected by the 230 Fifth Avenue Corporation. The Building adjoining, at 1140 Broadway, was designed by Maynicke & Frank, Architects, and built by Charles W Cowen Co. Both are on Edison Service



H. Craig Severance & William Van Allen, Architects
Thompson-Starrett Co., Builders

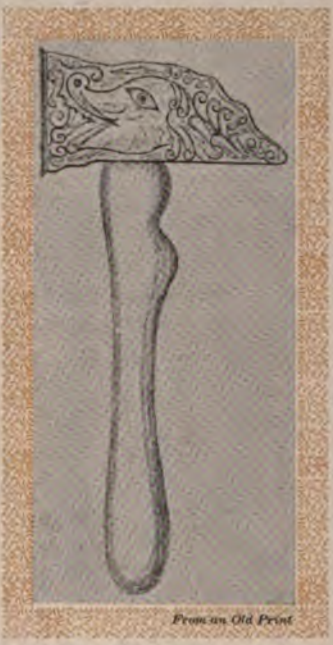
Photographic Bureau of The New York Edison Company

The Albemarle Building, on the site of the old Hoffman House, at Broadway and Twenty-fourth Street, is another large Edison Customer. This Building, which is also devoted exclusively to Mercantile Business, is a Splendid Example of its Kind

The Art of the Hammer

HAMMERING is more than an industrial art. Duly regarded, it is an index of history.

In the good old days before arbitration became fashionable the hammer—of wood and stone—took on the character of a vital function. Remnants of these primitive "ever-readys" have been found deep in the cliff-side caves of Central and Western Europe where, it may be assumed, they figured prominently in neighborhood arguments. Of well selected slugs of rock bound by rawhide thongs between knotted sticks, these hammers formed a method of reasoning esteemed beyond any system of logic since devised. The transition to polished stone left the businesslike corners of these old-time pounders quite unimpaired.


From an Old Print

A Richly Worked Armourer's Hammer of the Middle Ages

This was long before the gods took an enlightened interest in human affairs. With appreciation of the thunder-bolts from Olympus and the celestial blacksmithing involved, the hammer found itself retired from the firing line to a place at the forge. In fact, of the hammers that have survived in picture or substance, the most interesting and numerous are those of the armour makers. Many the classic frieze and vase painting showing the armourer gracefully posed, the hot sword blade before him and, swung with the two hands, a long-shafted hammer, slender of head and ornamented at times with relief work and inlays. Many again the Egyptian pictures in sandstone or granite with the smith at his labor, the hammer, long-handled with a head varied in size as the type of the undertaking. How these heads were kept on is not always shown. That the shaft often sticks through a distance of some inches would argue a reluctance against taking chances.

Of the Roman and Middle Age hammers that have come down, most are revelations of the dignity with which the craft of the armourer was in those times invested. Such hammers were plainly instruments of members of the most honorable and lucrative craft of the age. Indeed, they were themselves the work of artists. Some, as seen in the illustrations, were of extreme elegance; frequently the handles were covered with chamois skin. An implement such as the one pictured weighs six pounds and presents a head of chiseled steel highly wrought and exquisitely finished. Shown on its near side in high relief is the head of a dolphin while accompanying it on the side hidden a lion's head is similarly worked. The face itself is a plain, flat, perfectly square surface bespeaking the skill of the user. Another one, yet more elaborate, is a composition of bronze and gilt damascened in various colors. The minute handle designs are inlaid in gold wire set off by bands of ivory. One can imagine the complacency of the wielder of such implements and can picture perhaps a smile of scarcely veiled contempt for the wearers of his handiwork whose only art, after all, was to deal hard knocks. The same idea inspires the famous song of the armourer in "Robinhood:"

From an Old Print

An Array of Hammers Ranging from the Stone Specimens of Prehistoric Times to the Specialized Steel Heads of Sixteenth Century Europe

The sword is a weapon to conquer fields,
  I honor the man who shakes it;
But naught is the lad who the broadsword wields
  Compared to the lad who makes it.

A slender head, of centuries-old celebrity, is of gold. It may be said to be the instrument of interest in the moving ceremony of the Vatican marking the jubilee opening of the great door of St Peter. Chased with exquisite richness and topped by recumbent figures, this hammer reverts to the Fifteenth Century, when it was first employed by Julius III.

With the passing of the days of chivalry, the romance attaching to the hammer and in fact to most things savoring of the practical, came to an ending. For some hundreds of years the hammer, short of handle and plain of head, has driven its way through a work-a-day existence, its only change being from time to time an adaptation more remote from the decorative and more urgently suited to the hammering at hand.

In full accord with the times, the newest attainment in hammer evolution is electric in operation. The parts, a motor, a drill, and a magnetic clutch-plunger, illustrate a working principle simple as it is ingenious.

The plunger, which delivers the blow to the drill, lies loosely within a cylindrical sleeve. Outside this

From an Old Print

An Old Florentine Hammer Damascened in Various Colors

sleeve is the magnet coil, stationary, the sleeve moving back and forth within it. The coil is in series with the motor and the current in it is at all times steady and in the same direction.

When current is switched on by a button in the handle, the solenoid creates a magnetic circuit with the thick sections of the sleeve as the poles and the plunger as the armature. On the sleeve moving back and forth by the motor, the effect is that of similarly moving the pole faces of the magnet. The plunger, clutched across the poles, moves with it, transferring its energy to the drill, which it meets near the end of the stroke.

These electric hammers have long since passed the experimental stage and are being used with great success by companies installing switchboards, pneumatic-tube systems, piping, railings, sprinkler systems, fire escapes and fire doors.

Eggs by Electric Light

WITH the rapid shortening of the days, the electric expedient of a Cincinnati poultry man will appeal to others interested in the business.

At five each morning the inventor turns an electric switch in his bedroom and the hen house is flooded with brilliant illumination. The inmates, under the impression that dawn has broken suddenly though unaccountably, proceed to the day's activities, with the result that appreciable headway has been gained by the time neighboring roosts awaken.

By five in the afternoon, when day starts waning, the same thing is repeated. For two hours, more or less, these hens continue to scratch and lay while their neighbors are perched in dreamland. The eggs produced equal in number the record of the longest days in summer.

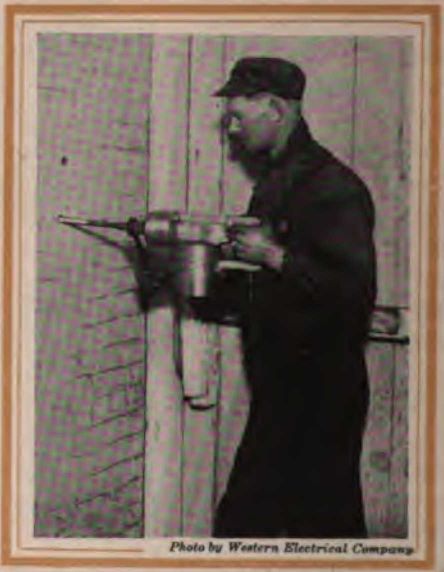


Photo by Western Electrical Company

The Electric Hammer of the Present

Paint and Varnish

Old & New

WHEN Noah smeared the seams of the Ark with pitch the plain but not unvarnished tale of structural coating had its beginning. The assumption is that this early navigator learned the art of protective coating from his immediate forerunners. However, credit must be gauged by the available record.

The oldest instance of actual varnish is that of the Egyptian mummy case. This compound, a solution of resin in oil of cedar, has reflected the gaze of thirty centuries and still protects with unbroken surface the brilliant pigments beneath it. The fact that Egyptian varnish was laid on with a knife argues that "thinners" were unknown. The pigments themselves were mixed with a solution of glue, a marked advance over the grease compound used among savage tribes since time immemorial.

Greek literature abounds in references to varnish and its use, a varnish not essentially different from that made at present. Apelles is represented as coating his paintings with this preservative, especially his Venus, whom, alas, an exceptional polish failed to insure against ruthless events. Applied to Greek statuary, varnish was rubbed on with the hand to a high polish. Indeed, there is reason to believe that the white and somewhat cold survivals once glowed with color and glistened with varnish from the hand of Praxiteles himself.

China, the home of lacquer, is supposed to have been familiar with its use from very early times. Resin from Arabia was brought hither in great quantities at a time antedating manuscript record. Tung oil, employed today in varnish making, has been known in China from remote antiquity.

Rome used not only distemper but also an encaustic paint the colors of which were mixed with wax. A third method described by Pliny involved melted wax. This composition, put on with a brush, was reserved for war vessels, and in its essentials of a melted, non-drying paint is still made use of on ship exteriors.

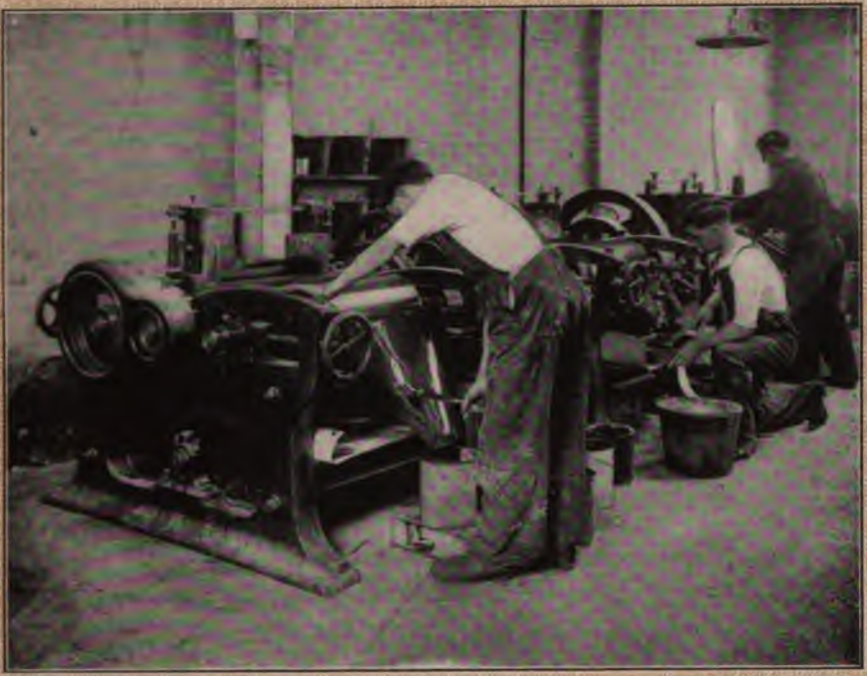
The First Treatise on Varnish Making

Owing to the monastic survival of learning during the Middle Ages it is not surprising to find a monk, Theophilus, compiling in the Twelfth Century what is possibly the first treatise on varnish making. That he was a man of great acumen and many-sided genius is further brought out by the lament of Charles the Thick that such a mind should be shut up in a convent. That Charles was far from thick appears from the good monk's writings on the broad and at that time difficult subject of varnish making and application. The quotation reveals how closely the present method follows the old. "Set three or four stones around a fire. Place on these a common earthenware pot. Into this put the gum (amber) and over the mouth of the pot put a smaller pot which has in the bottom a middling sized hole. Around these put luting so that nothing may get out of the crevice. You should have a slender iron rod to stir the mass, with which you may feel that it is entirely liquid. You must also have a third pot set over the coals containing hot oil. When the gum has been melted so as to be drawn out like a thread, pour in the oil and stir with the iron rod and cook so it may not boil. From time to time draw out the iron rod and smear it over a piece of wood or stone to find out if there is separation. See to it that there are two parts of oil to one of gum. When it is cooked thoroughly, remove it from the fire, cover it, and cool it out of doors." A method of varnish making set forth in a Fifteenth Century manuscript was in full use in English factories in the Nineteenth Century.

The brilliant remark that "that which makes paint decorative is its color," was reserved for a Twentieth Century treatise. Ceunini, who cannot be suspected of the profundities of modern thought, describes a means of grinding pigment that reveals the simple thoroughness of his day. "To grind properly, procure a slab of

Reproduced from the Journal of the Chicago Paint Works

Varnish Making by a Religious Community in Mediæval,Times



Photographic Bureau of The New York Edison Company

Modern Motor-Driven Paint Grinders. Comparison with the Hand Process is out of the Question

porphyry which is strong and firm. Take another stone, also of porphyry, smooth on one side and raised on the other so that the hand may hold and guide it with pleasure. Then take some form of color and put it on the slab and with the stone in the hand break it into small pieces. Put some clear water to the color and grind it well for half an hour or an hour. If for a year, so much the better. Then take a flat piece of wood, thin like a knife, and collect the color neatly."

Paint grinding of today is somewhat more elaborate. In the Bielenberg establishment on Front Street, the paint is ground by a series of motor-driven machines employing an ingenius arrangement of rollers. Three of these rollers, of steel or stone, form the equipment of each grinder.

The rollers revolve in sliding contact, the further two in toward each other, the oil-mixed pigment resting in a mass along the crevice. Picked up in microscopic particles on the roller surface, the mixture is carried to a third roller, revolving contrariwise to the second, and by a special gear arrangement working or shifting an inch or two forward and back. A metal collector scraping this third roller gathers the pigment into a bucket from which it is ladled out for a second and possibly a third or fourth passage through the apparatus. The working rate of these machines compared to the only previous method of hand grinding by mortar and pestle is impossible practically to calculate.

System Systematized

SYSTEMATIZING system may truly be said to be the work of a printing press. No, do not begin a mental picture of a ponderous machine, with shifting beds and huge rollers, that crunches and groans as it works. The press in question is hardly bigger than a large size adding machine, yet it is complete in every detail and can perform the work for which the average printer heretofore has required presses many times the size. The press in question is known by the trade name Multicolor.

The modern trend toward systematizing everything while undeniably well worth while, has brought its own burden upon the average corporation. With systems came the need for an infinite number of report blanks, forms, checking lists, form letters and so on *ad infinitum*. And all these, with few exceptions, have in the past been rushed to a printer. Here delays occurred, time was wasted and a great deal of money spent. But with the advent of the Multicolor press all this is being eliminated. System is systematized, and now corporations provide their own forms without worry, needless expense, or bother of any kind.

Operated by the Stenographic Force

Printers, printers' devils, linotypers and all the rest of the personnel of the usual print shop are unnecessary. The little press can be operated by members of the stenographic force, and the type can be set by these same persons after they have spent a few days learning the mysteries of the cases.

The press is about a foot in width, about three feet long and stands waist high and it is operated by a one-sixth horsepower motor. In spite of its diminutive proportions the Multicolor is capable of doing the work of printing any job up to the size of a letter sheet. It can reproduce reports in which halftone illustrations are featured, it can print any kind of blank or form needed, and, strange though it may seem, it is capable of three-color work. It is this last which gives the press its name. This three-color work, however, is not of the kind usually designated by that term. The press will print three colors at once. For instance, it will print a green letterhead, a black bodied letter and a blue inked signature if desired. This is possible by the peculiar arrangement of inking discs and rollers. Two discs are used, one at either end of the machine. The upper rollers will ink from one plate while the lower rollers will ink from the other, and then, as the bed underneath shifts the chase back and forth, part of the type is coated with one colored ink, while the other part is coated with the other color. The third ink is supplied by an adjustable ribbon which works from the top centre of the machine.

Tiny steel chases are used, and here too the work of reproducing report forms and system blanks of all kinds is facilitated. These chases can be stored away in cabinets with the type left standing. Thereafter, every time a new set of blanks of that particular series is required, the chase need only be brought from the cabinet, locked into the bed of the press, the motor started, and presently new blanks are piled up by the ever active "jogger," which is located at one end of the machine, and which keeps the "job" in good order and evenly stacked.

Although not very old the Multicolor press has become very popular. Some of the largest and most important firms in New York have secured them, and many progressive printing shops have installed them to handle job work of certain kinds. As a matter of fact, the active little press can be used in almost any business.

Photographic Bureau of The New York Edison Company

With the Multicolor Press and this Little Print Shop a New York Corporation Does all its "Form" and "Blank" Printing

No special training is needed to feed this little press. Indeed it is said that the manufacturer is now working on an automatic feeding arrangement and some day it will only be necessary to place the blank cards or sheets of paper on the feeder, start the motor and then pay no further attention to the press until the supply of stock has been printed.

Pan-Polician

Once the flashing eyes of Pan
Pierced the evening haze to scan
How amid the brakes and brambles
Pranced the satyrs in their gambols.

Now when sunset idly dies
And the mists of evening rise,
Other rays from other lamps
Light the pranks of modern scamps.

Charles Mitchell

Golden Silence

IN spite of all that has been said to the contrary there are times when money does not talk, does not in fact utter even the faintest whisper. Daily, several millions of dollars in coin of the realm, in gold or silver or in bank notes, flit about the city, and as it proceeds upon its unostentatious way in the various bank wagons and money vans it makes never a sound. No one except certain paying tellers, armed guards and a few automobile drivers know of its coming or going and so far as the gangster, thug, professional crook or the work-a-day public is concerned it may as well be locked in vaults with walls of invulnerable thickness, so secretly and so quietly is its passage from point to point accomplished.

Although you may never have noticed them or, seeing them, have never stopped to affix an indentification, there are several money vans moving about the city almost every business day. Of course, they are not marked as such, and means of recognizing them are scant.

Before proceeding further, it is necessary to mention that at one other time an attempt was made to tell the story of the transportation of money about the city by means of automobiles, the details of the way a certain paint concern distributed its pay-roll by means of electric vehicles being published in a magazine. So clearly was every detail given and so well was the story written that when a copy of the magazine containing it fell into the hands of a gang of notorious crooks in Chicago, the crooks, on the strength of the information, planned a hold-up and coming to New York in a group of five, followed the details given in the story, found the money van and after shooting the driver made off with a portion of the money. Three of the five were finally arrested, and from one of these the above story was secured by the New York police.

With the disastrous results of the first story in mind, The Edison Monthly will carefully avoid all details, names and locations in this article, and in that way aid in the well-laid plans of a half-dozen or more banking institutions that keep the transportation of their money a strict secret.

Maintaining a Money "Balance"

But why the transportation of money about the city, you ask? Well there are any number of reasons but the principal one is the necessity of maintaining a balance of bills and change among the different banks. The character of the city does not lend itself to the balancing of currency in a satisfactory manner. The up-town banks in the residential district, for instance, receive small bills and change in great quantities, but big bills are not so frequent. Also the greater part of their business is done in cash. On the other hand the down-town banks, often the parent institutions, do a tremendous business in checks and large currency. Moreover, they are the banks that receive the new currency from the Government, and it is from them that the crisp new bills and silver must be distributed. Also it is through their efforts that the up-town branches are provided with the proper supply of large bills while they, themselves, are kept provided with the change that is necessary to conduct their business. And, of course, the bills and coin must be transported in absolute safety, both as to theft and fire.

These are the reasons why many banks have selected electrics for their money vans. With electrics the danger from fire is entirely done away with. The simplicity of their operation also adds to the security of the contents of the vehicle, for the drivers are able to handle the automobile under all circumstances.

The cars have been designed especially for carrying valuable loads and as a result embody some highly interesting features. Armor plated steel bodies are used, and special arrangements of interlocking and double-locking doors have been made in some cases. And always there are provisions made inside for at least one armed guard and a clerk, who conducts the business of the van, and attends to the money distribution.

One of the down-town banks maintains a money van that is among the busiest in the city. This vehicle, built by the Commercial Truck Company of America, travels almost the entire length of Manhattan Island, stopping at the different branches of the institution and the various other small banks that must be served. A bank further uptown maintains a money wagon built for the purpose by the General Vehicle Company. Unlike the truck used by the down-town institution, this is occupied chiefly in carrying pay-roll money from the bank to the various depositing firms. It is estimated that the vehicle averages about twenty miles every business day during the year.

Armor Plate Money Van

In another General Vehicle one-ton truck, which carries coin on practically every trip, some very unusual construction features exist. The body is all steel armor plate, and the doors are arranged to guard against a possible street attack. The only entrance to the van is immediately behind the driver's seat. The money window, an aperture twenty-two by thirty-three inches, is located shoulder-high above the curb, and when this is opened the entrance door is automatically locked. This car makes between twenty-five and thirty miles a day gathering up bags of money, mostly silver. Each bag weighs seventy-five pounds, and at the bank each is handed out through the money window to a porter who stands at the wagon facing out so that he has a clear view of all who are passing and thus can guard against a surprise attack.

These may seem to be unnecessary precautions to the average New Yorker, who believes that in a community the size of the Metropolis there is little real danger. But those who have the responsibility of the money upon them are inclined to believe otherwise and therefore plan accordingly. Indeed the methods of protection adopted by some firms are so formidable that were they really known it would require a stout-hearted thief to attempt a raid.

After the Worm Turns

AMERICAN ingenuity, given half a chance, can outstrip the world in almost any field of industry, regardless of how long the race or people with whom it originated have worked to perfect it. An excellent illustration of this is seen in the manufacture of silks. For centuries the fabric bearing the stamp of the French looms was regarded as superior. Only the designs that originated in Lyons, Marseilles, and the other centres of Southern France were considered of account, and as for block printing on silk, this art belonged to the Frenchman alone and no one, not even the ingenious Italian, dared to attempt to vie with him.

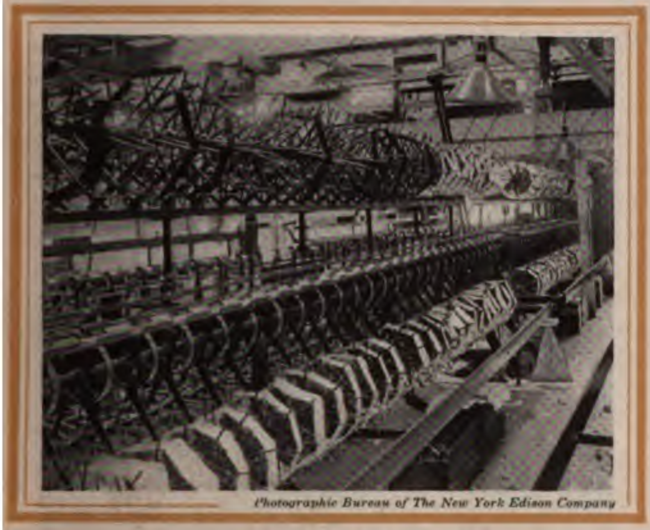
But in a few short years all this has changed. Yesterday, every American shopper of discrimination looked first for the French loom mark and second at the quality of the silk. American silks, considered inferior, served largely in a secondary capacity. But the war has put a stop to the operation of the French looms and as a consequence their marks have become less conspicuous in American retail establishments. The material not to be had, American silks had to be substituted. Buyers, who year after year went to France with hundreds of thousands of dollars of American gold, stayed home. And that gold is now distributed among the American silk manufacturers.

Photographic Bureau of The New York Edison Company

Hundreds of Quills are Made Ready for the Loom Shuttles Here

Right there was the incentive—gold was more plentiful. The American maker was gaining a wider market for his product within the boundaries of his own country, and he forthwith invested the new gold in ingenuity and machinery for the production of better silks. The silk men of this country have gone into the game with every resource at their command. They have applied their craft, the money, their propensity for catchy trade names and their energy.

Among the foremost manufacturers in the country who have done much to bring the American silk industry on a par with that of France is the firm of H R Mallinson Company. Through their effort and their resources the eyes of the silk makers have been opened to the possibilities and what can be done with them. In the matter of original designs this firm is among the leaders, and it is interesting to note that many of their silks, such as the Mexixe and the State Flower series, are being displayed in the Smithsonian Institute as permanent exhibitions of what American silk manufacturers of today can accomplish. For originality in design these two series did more in the way of missionary work among manufacturers than anything else. The Mexixe series portrayed the art of the Aztec, both in color and arrangement, while the Flower series represented the floral emblem of each State in the Union.



Photographic Bureau of The New York Edison Company

From the Whirling Swifts the Silk is Wound on Spools

The Mallinson firm operates three large mills. These are located in Erie, Pennsylvania; Hoboken, New Jersey, and Astoria, Long Island. And the looms of these factories are responsible for the very superior varieties of American silks known throughout the country as Pussy Willow, Will-'o-the-Wisp, and Khaki-Kool. Any one of these mills affords an excellent illustration of what Americans are doing to manufacture better products than their French rivals.

More than three hundred looms, and the other necessary machinery, are operated in the Astoria mill which, by the way, is the smallest of the three Mallinson factories. Here every operation in the weaving of silk fabrics may be seen from the time the pearly white or golden yellow hanks of silk are unpacked from their foreign wrappings to the time great machines measure and fold the finished product and make it ready for distribution.

The bundles of hanks of silk arrive in their original packing. Some come from Italy, some from China and the balance from Japan. The variation in color depends upon the country in which it is produced, the Japanese variety being pure white while the Italian is a rich yellow. The first operation, after the hanks are taken from the stock room is, in the words of our grandmothers, to unskein it. Only, of course, grandmother's method in unskeining worsted is hardly followed. Long machines, electrically driven, containing "swifts" are employed, and the silk is wound onto spools and quills. A hundred or more of these swifts are operated on a single machine and a corresponding number of spools are wound.

This thread is perfect, for before it left the country in which it was spun by the turning of the ever active worm it had been "thrown."

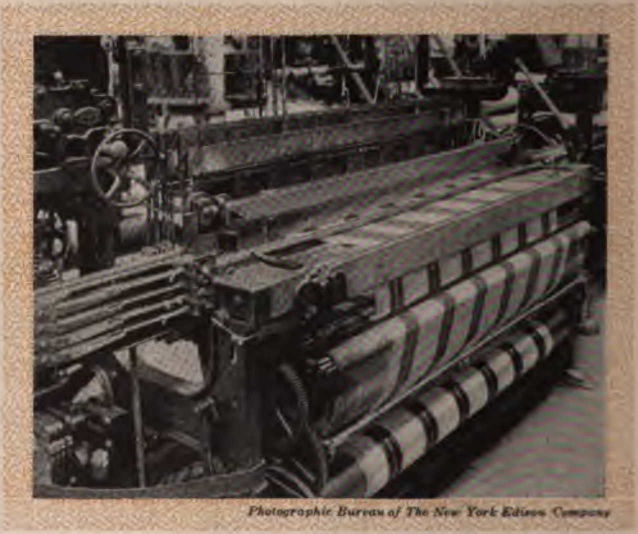
The process of throwing consists of gathering the fine silken strands after they have been unwrapped from the cocoon and twisting them into the desired thickness. Threads of different twists are used to make different qualities of material. Tight twists form one surface while loosely twisted threads form still another quality of sheen.

Throwing is an art in itself and a throwster earns a great deal of money, wherever he may be employed.

Thus the fabric that the threads will produce is known before it is put on the spools. Hanks of certain twists are purchased for certain work. Following the spooling, certain silks are selected for the warp and certain others for the filling. The spools for the warp are put on big frames to be reeled off to giant beams while the silk for the filling is rewound on quills on a machine that looks very much like the contrivance used in the unskeining operation.

These quills are fitted into the shuttles, which look remarkably like the bobbins used in sewing machines. The warp silk is transferred from the spools and placed on racks from which it is transferred to a beam, where it is laid evenly and the different colored silks worked in. From the beam the silk is rewound to a drum, and here too it is laid on with great accuracy. Indeed there is never a single thread out of place in the thousands that are used to work out a single fabric.

When finally wound, the drum is taken to the loom and put in place at the rear of the machine, each thread being worked through the loom and attached to a second drum in the front of the appliance on



Photographic Bureau of The New York Edison Company

A Modern Silk Loom in Action. The Four Shuttles can be seen to the Left of the Machine

Photographic Bureau of The New York Edison Company

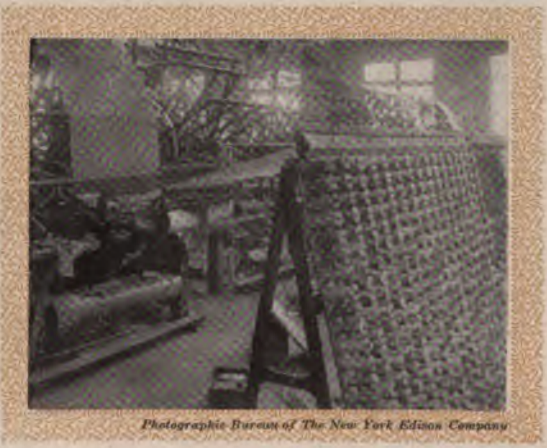
A Final Inspection of the Warp is made before it is sent to the Loom

which the finished material is formed. Then the quills are placed in the shuttles and all is ready.

There are four or more shuttles on the loom, and these work across the machine at right angles to the direction in which the warp is wound. Very ingeniously as the machine operates each alternate thread of the warp is raised at the point where the silk passes across the track of the shuttle and at the same instant the shuttle is shot across the machine, carrying its silken tail with it. Back and forth the shuttles travel with lightning speed and with tremendous force. Click-clack, they rattle, the shuttles of three hundred looms in action making a noise not unlike a battery of field artillery going into action.

There are several kinds of looms in use in the Astoria mill of the Mallinson Company, some producing silk with designs of a most elaborate nature. The loom work of course represents the completion of the fabric, but it is not the final process by any means. The cloth must be inspected by experts and finally measured before it is ready for the market. It is estimated that these looms which, by the way, are American built, can manufacture from ten to forty yards of silk a day, depending upon the nature of the work required of them. And it has been said that they can accomplish everything in the line of intricate weaving except that done by the hand looms of France.

In all probability this work could be done in America if a really big demand ever developed for a product of this kind. American fingers are just as nimble as French fingers and there is little doubt but that hand looms could be operated here as well as anywhere else.



Photographic Bureau of The New York Edison Company

From Great Racks of Spools the Silk is formed into the Warp

Manufacturers and Agents (Continued)

Heating and Cooking (Concluded)

Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Motors

General Uses

Allis Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Mad Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building, Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St

Refrigeration

Automatic Refrigerating Co—30 Church St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Mad Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—1790 Broadway
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Snow & Co—531 W 46th St
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St
Wertheimer Sign Co—558 W 36th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—511 W 42d St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl, 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 B'way
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—30 E 42d St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Ave
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James—119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden) 119 W 42d St
Hart Wallace B—(Arora)(Judd)(1900) Cataract—46 E 41st St
Home Devices Corp (Modern)-Bush Term Bklyn
Hurley Machine Co—147-157 W 42nd St
Kandem Electric Co Inc—49 E 21st St
National Sewing Machine Co—290 Broadway
Sibley Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Construction Company
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 444—Russell & Co
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Fifth Ave 75 —H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Electric Company
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Electric Contracting Company
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Electric Construction Company
West 31st St 109—Jandous Electric Equipment Company Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-40—New York Electric Installation Company
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Manufacturing Company

Electrical Requirements for Mill Service

ing Mill

Service	Required H P
er and matcher, 15 by 6 in	40
Wood's car-sill planer, 24 by 16 in	50
in double surfacer, 12 by 30 in	30
rican Wood Working Company, outside moulder, 14 by 6 in	20
le surfacer, 36 in	10
nlee jointer, 24 in	5
nlee automatic cut-off saw, 36 in	15
nlee vertical cut-off saw, 40 in	15
nlee cut-off saw, 24 in	7.5
in combination rip and re-saw	15
nlee verticle boring mill	15
nlee horizontal four-spindle car-boring machines	10
nlee horizontal and radial car-boring machine	3
nlee heavy car gaining machine No 3	15
nlee heavy car tenoner with trim-saw	15
nlee heavy car tenoner No 4	15
nlee universal wood-worker, 16 in	7.5
Woods's hollow chisel mortiser No 300	15
Fay Eagan No 70 tenoner	5
Berlin band rib-saw No 281	15
Berlin double spindle shaper	10
Fay and Eagan panel carving machine	5
American Wood Working Co four-sided picker	5

Sheet Metal

Service	Required H P
Bending roll, 6 ft wide by ¼ in thick	5
Bending roll. 6 ft wide by ½ in thick	10
Bending roll, 6 ft wide by ¾ in thick	15
Bending roll, 8 ft wide by 1-in thick	25
Bending roll, 10 ft wide by 1⅛ in thick	35
Bending roll, 10 ft wide by 1½ in thick	50
Punches, 1½ in hole in 1 in steel	10
Punches, 2 in hole in 1 in steel	12
Crimping machines	2
Blanking press	1
10 ft shear, No 9 iron	10
No 10 gauge cornice press	10
48 in multiple punch	7.5
Iron roofing press	5
Metal painting machine	2
One corrugating roll machine	5

Department Stores that Sell Electric Appliances

ms-Flanigan Co, Westchester & Third ve, Bronx, Basement
ett Bros, Col'bus Ave & 74th St, B'm't
omingdale Bros, 59th St & Third Av, "
Daniell Sons, 759 Broadway, Basement
nbel Bros, 6th Ave & 33d St, Fifth Floor
Greenhut & Co, 6th Ave & 18th St, B'm't
F Koch & Co, 132 W 125th St, Basement
is & Conger, Sixth Ave & 45th St, 1st Floor
Liggett-Riker-Hegeman Drug Stores
*James McCreery, 5 W 34th St, Sixth Floor
*R H Macy & Co, B'way & 35th St, Bas'm't
Rothenberg & Co, 34 W 14th St, Basement
Stern Bros, 41 W 42d St, Fourth Floor
*John Wanamaker, B'y & 10th St, 7th Floor

---

*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

er Hewitt Elec Co—730 Grand Street Hoken N J
ral Electric Co—30 Church St
ral Illuminating Co—369 Broadway
berg J H—38 E 23d St
dem Electric Co Inc—49 E 21st St
e Electrical Co—131 Hudson St
tern Elec Co—463 West St and 105 W 40th St
tinghouse Elec & Mfg Co—165 Broadway
l M J & Co—211 Fulton St Bklyn N Y

Mercury Vapor Lamps

er-Hewitt Elec Co—730 Grand Street Hoken N J
tern Elec Co—463 West St and 105 W 40th St
tinghouse Elec & Mfg Co—165 Broadway

Automobiles

Commercial I—Industrial P—Passenger

erson Electric Car Co of N Y (Detroit ectric)—Central Park West at 62d St (C & P)
ntic Elec Vehicle Co—52 Vanderbilt Ave (C)
omatic Transportation Co—258 B'way (I)
er R & L New York Corporation The—ntral Park West at 62d St (P)
a Co of Chicago—30 Church St (I)
m'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Smith-Eldridge Co Agents) —39 Cortlandt St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey St Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent) —236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—Mt Vernon NY (C&P)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St

Manufacturers and Agents (Continued)

Charging Apparatus (Concluded)

Industrial Controller Co—50 Church St
Lincoln Electric Co Cleveland O (Read-Dresser Eng Co—149 B'way Agents)
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Edison Thomas A Inc—141 Lakeside Avenue Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Mfg Co—165 B'way

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—527 W 23d St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42d St
Phila Storage Battery Co—American Building B'way and 58th St
Storage Battery Supply Co—239 East 27th St
United States Light & Heat Co—16-24 W 61st St
Walker Vehicle Co—531 W 46th St
Willard Storage Bat Co The—228-30 W 58th S

Buffers—Polishers

Fort Wayne Electric Works of the General Electric Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—410 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303-305 Fifth Avenue
Hospital Supply Co The—53-55 5th Ave
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Av
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Bway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—35 Vestry St
Neel-Armstrong Co—2017 Fifth Ave
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 8th Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—5th Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St, 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 East 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 West 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 Broadway
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 West Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
National Elevator Co—62-64 W 45th St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—1790 Broadway
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Gerdes Theo R N—123 Liberty St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St
Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—1790 Broadway
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
Kandem Electric Co Inc—49 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 Broadway

Globes—Reflectors

Dealing William—1 Hudson St.
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42nd St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Kilmer Co The—320 Fifth Ave
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn, N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—1790 Broadway
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialties Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio

Heating and Cooking (Concluded)

Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St

Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
*424 Broadway	Spring 9890
*126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
*124 W 42d St	Bryant 5262
*151 East 86th St	Lenox 7780
*27 East 125th St	Harlem 4020
*362 East 149th St	Melrose 9900

*Open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts west of the Bowery and south of Catherine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street east of and including the Bowery, and north of and including Catherine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

318 West Spring Street

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The Edison Monthly
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JOSEPH WILLIAMS, Treasurer
LEWIS B GAWTRY, Secretary

The editor was riding in the subway beside two school girls of perhaps seventeen or eighteen. They were chatting busily and gaily, when one of them announced, "I'm going to the Electrical Show tonight. Of course, I don't know anything about electricity," she continued, "but I'm going just the same. You know, my brother's class from school is there, and I guess if he could go, I can."

This little incident illustrates a point that is too often overlooked by people who are "in the business." Attendance at the Annual Exposition reaches some 200,000; of these, there are perhaps five thousand to whom "the show" is an old story. Being closely in touch with various branches of the elctrical industry, each succeeding year holds little for them of marvel and surprise. But for the possible five thousand there are at least 25,000 to whom not only the Exhibition but also the ordinary applications of electricity are new.

To this group belong the two school girls, and they are just the ones that should be reached. Ten years from now, or less, those girls will in all probability have homes of their own and the good of the community demands that these homes shall be the most sanitary and best managed. If that end is to be attained, girls of today must become familiar with the best tools for producing the desired conditions.

◆

While training the future wage-earners and home-makers is one of the important functions of the annual Electrical Exhibition just closed, of equal value is its power to reveal ourselves to ourselves.

One of the visitors to the vocational school exhibits was the editor of a large national magazine. As this man was escorted from space to space, inspecting the plumbing, metal-working, machine-sewing and printing demonstrations from New York's trade schools, his amazement grew. "Do you mean to tell me," he exclaimed, "that children in this city can get that sort of practical training for nothing!" Assured that they could, and by night as well as day, the editor remarked, "Well, it's a great thing to learn what's going on in your own town."

◆

As electricity has proved itself the most efficient agent of modern man, it is only natural that national and world conditions should be reflected in an electrical exposition. Consequently, one found in juxtaposition exhibits of the highest skill in the arts of peace and war. Here stood a display of the most intricate forms of silk weaving; directly above it, spectators were viewing the grim torpedo. In one booth were storage batteries to be used in safeguarding a city's electric supply, and another type, destined for the lurking submarine.

The gyroscopic stabilizer might make the aeroplane a surer messenger of swift tidings, or a more certain minister of death; the immense searchlight on the roof might serve either as a decorative feature for some festival occasion, or as protection against an attacking foe; the calorimeter will measure impersonally the amount of nourishment necessary for the plain citizen going about his daily round of duties, or for the soldier marching under the weight of his full service accoutrement.

◆

Newcomers at the Exhibition were representatives of the state suffrage organization. Their place in such an exposition is logical enough: the home should not be neglected for civic duties, they explain, but so managed that the home-maker has time to take part in matters of public welfare. Therefore the Suffragists as a body advocate the transformation of housework by means of labor-saving devices, among the most important of which are the various electric domestic appliances.

In several ways, this position parallels that announced at the Exposition by Mr Edison, who came to present the prize awarded to the vocational school student furnishing the most original piece of work of an electrical nature. Appropriately, the date selected for the occasion was October 21st, celebrated throughout the country as the anniversary of the invention of the incandescent lamp.

After inspecting the exhibits, Mr Edison stated that for him the two most significant elements in the Exposition were the vocational schools demonstration and the assemblage of electric labor-saving devices for the home. The educational exhibits represented the training of the rising generation for the practical requirements of the leading modern industrial callings,—electricity in man's world; the household mechanisms the adoption of electricity into woman's world. Here, he prophesied, would be seen the greatest advance in the coming decades.

◆

Notably the Exposition just past carried out the promise of the last few years in presenting a series of exhibits worthy of thoughtful consideration. An illustration of this is the extent to which the "Show" is now being utilized by students from the middle and higher institutions of learning,—pupils from high schools, colleges, technical and vocational schools. No less than 21,256 attended.

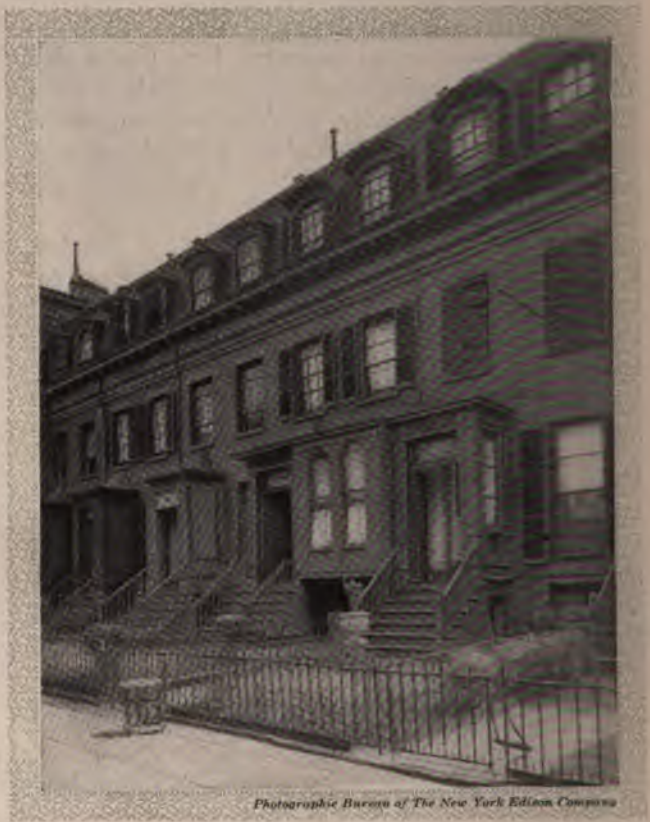
This educational tendency has been apparent for some time. Roughly speaking, the earlier of these "shows" were content to draw a crowd and astonish it. The present purpose is more to draw a crowd and make it think. This is no reflection on former exhibits, for when they were first undertaken, electricity was to the layman only a marvel and a mystery. A mystery it still remains, but in the meanwhile it has become an enormous force for the world's progress. Concerning this development the public now wishes to know, and for the great majority of non-technical people the Electrical Exposition now serves as an annual practical demonstration of electricity at work.

Chelsea Survivals

THERE may be old communities hereabouts whose one-time boundaries and characteristics are easy to trace. Chelsea is not one of them. Never large in extent and of comparatively brief identity, Chelsea Village presents today but sparing evidence of its original aspect.

However, the old town, like Greenwich, south of it, and Yorkville, on the opposite side of the Island, has preserved some reminders of a picturesque past even if on a scale rather more meagre than that of its neighbors.

Among these reminders the most familiar and the most typical is the row of diminutive houses on Twenty-fourth Street west of Ninth Avenue. Half asleep, with quaint green shutters, tiny gardens in front and enclosed by wrought iron fences of curious pattern, these old-time dwellings, still known as the Cheslea Cottages, preserve a century and a half of atmosphere with a simplicity mightily at variance with the assertveness about them. Porches shut in by latticed iron work, an inevitable carved doorway, a shining knocker, clear panes and crisp curtains, together paint the Chelsea of village days. One cottage possesses still a peaked roof as high as the very house itself.



Photographic Bureau of The New York Edison Company

The Picturesque Chelsea Cottages on Twenty-fourth Street are as Yet Undisturbed by Surrounding Developments

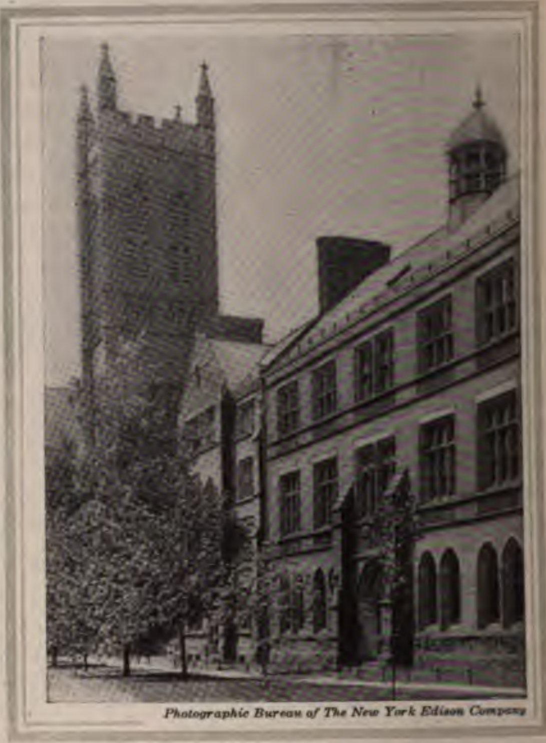
Around the corner on Twenty-third Street extends that row of self-conscious dwellings known still as London Terrace. Once the abodes of fashion, these fine old houses have seen themselves set about and obscured by residential and commercial structures of varied boorishness. Not enough was it to have lost their erstwhile dwellers and the prestige accompanying. The residences themselves, at the mercy of tenants of less sentiment than initiative, have suffered interior change of all sorts. Better off have been the exteriors, which today look out upon their liberal lawns with much the same complacency as fifty years ago.

Photographic Bureau of The New York Edison Company

Looking East Along the Once Fashionable London Terrace. It was Hereabouts that Chelsea Village Had its Beginning

Across the road, under the big catalpa trees, Chelsea had its start. At that time no habitation was visible except to the south where, upon a hill alongside the Fitzroy Road to Greenwich, a certain Captain Clarke, a French and Indian War veteran, had built him a home. He called the estate Chelsea in recollection of the English Chelsea, a celebrated retreat where many an aged fighter spent his declining years. Unhappily, in the course of events, Clarke fell ill, the house was burned, and its warrior owner died soon after.

His widow, Mollie Clarke of engaging celebrity, rebuilt the place and proceeded to live there with her two daughters. This process was of a peaceful nature till the outbreak of the Revolution. As the redoubtable widow found herself along with hundreds of other conservative souls in strong sympathy with the Mother country, and as it was not her custom to conceal the fact, the Clarkes became the objects of many petty annoyances. The trouble culminated in the impromptu quartering upon the widow of a squad of Continental soldiers. While Mollie could not contrive to leave the house herself, she did manage to get word to General Washington setting forth in no uncertain terms her version of the imposition. In consequence Washington on the day following rode out from the city along the Bloomingdale Road to where Madison Square is now and turned into a by-way called Love Lane, now Twenty-first Street, that led under the trees to the Clarke place. It is related that the General was at first received coldly, but that on his promising to relieve the widow of the soldiers' support, the ice melted into an esteem never after disturbed.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Within the Seminary Close at Chelsea. The Property, Once an Orchard Lot, was given by Professor Moore of Columbia College

The irony of the affair enters in simultaneously with the entry into the house of a stray cannon ball from an English gunboat on the river. Madam Clarke fortunately was away at the time, but was informed of the incident on her way home by a chance Continental who called out, "Your friends have rent your house in twain." To which the doughty widow replied with a vigorous shake of the head, "I can thank *you* for *that*."

Photographic Bureau of The New York Edison Company

The Original Seminary Building, Likewise the Oldest Structure in Chelsea Vicinity

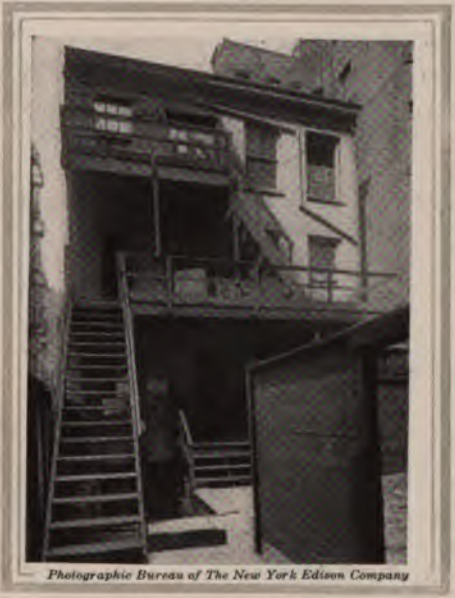
A number of houses had by this time clustered about the Chelsea estate, and the village therewith assumed the name. The old Manor House was occupied subsequently by one Benjamin Moore, a Protestant bishop and incidentally President of Columbia College. His son, Clement, to whom the estate fell, purchased a good bit of property adjoining and instituted repairs and improvements about the house itself. Clement, apart from Hebrew and Greek accomplishments on which he throve, proved considerable of a rhymester. It is of instructive comment on the vanity of things to reflect that while Moore's learned treatises have been relegated to the archives, certain simple verses of his written for his children and called, "'Twas the Night Before Christmas," survive in every nursery of the land.

A north orchard lot proving of less moment than Moore's interest in Episcopal affairs, he ended by giving the enclosure as the site for a theological seminary. The field took the name of Chelsea Square, the first building going up in 1825.

Among the outstanding relics of the day are a few isolated frame dwellings or cottages hidden away in the block interiors near Eighth Avenue from Twentieth to Twenty-fourth Streets. One walking with care down these side streets will observe in several places obscure passages leading through the houses fronting the street to unsuspected courtyards inside. It is in there that the curio seeker discovers antique frame dwellings with tall steps and narrow piazzas exhibiting to all intents signs of continuous occupation. So tottering, in fact, are one or two that they have been given over to makeshift commercial interests. The old blind courtways were once, needless to say, open upon the country lanes of the village.

Modernizing of the Chelsea district began with the acquiring of the water front for docking purposes. Following the rapid growth of these interests came naturally the erection of ambitious warehouses. That the seeming ambition of the first of these was well warranted is apparent to one viewing the bewildering array of such structures that have since marked the vicinity.

The New York Edison Company, by extending its mains throughout the Chelsea locality at a very early date, contributed immensely to the progress here of industrial development in every form. As a consequence today the district is known as one of the most important manufacturing areas in the Greater City. Doubtless, if the widow Clarke were on the scene, she would know well enough whom to thank for *that*.



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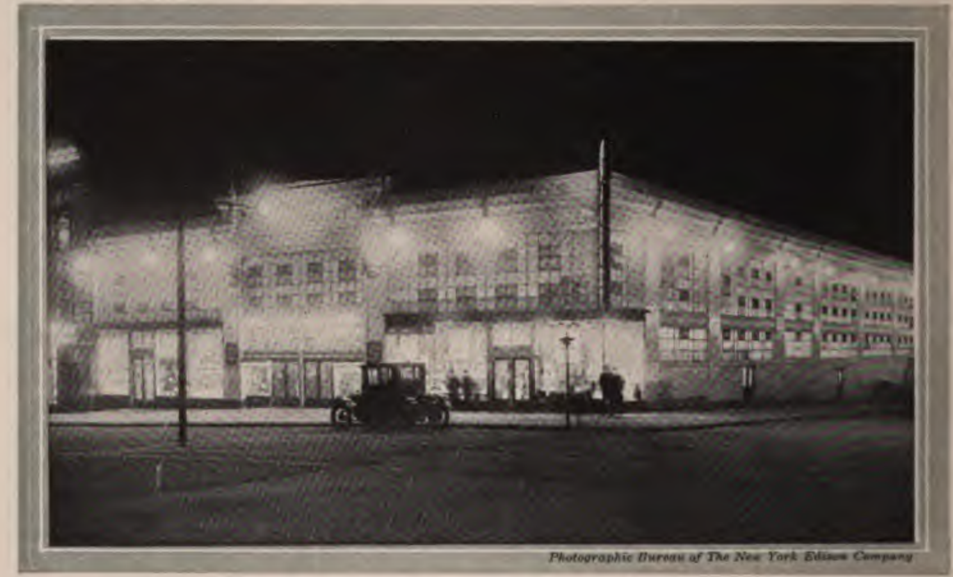
One of Several Antiquated Remains found in the Block Interiors about the Modern Chelsea

The People's Market

IF one has any doubt of the success of the community market here in New York a look about the new People's Market in 149th Street will prove surprising. The place, opened early in the summer, monopolizes a long, low, two-story building of white terra cotta. A mass of show windows occupies the street level. Across the story above, a succession of wide windows operating on the transom principle afford the best ventilation imaginable. In fact, whatever airiness and cleanliness may contribute in the way of first impression is evident before one sets foot within the entrance.

While the interior plan of such markets has been followed in a general way, the appearance is one of unusual orderliness and simplicity. Whatever talking there is occurs in the course of actual buying and not in the form of "barking" or gratuitous announcements from booths whose displays fail evidently to speak for themselves. The great room, exceedingly high by virtue of its two full stories, is lined throughout with white tile and lighted in common by pendant globes of ground glass containing 750-watt lamps.

Passing a quick-lunch quadrangle of marble counters and an attractive grocery shop with overhanging balcony, one encounters what is perhaps the outstanding feature of the Market, an enormous meat and fish establishment. Wide as the ground plan of the big room undoubtedly is, the


Photographic Bureau of The New York Edison Company

The New People's Market Not Only Holds its Own by Day, but at Night, thanks to Edison Service, it Stands Out as One of the Most Inviting Establishments on 149th Street

Photographic Bureau of The New York Edison Company

A General View showing the Wide Diversity of Booths and Stalls Afforded by the Big Market

stalls referred to not only monopolize the entire south end but reach considerable distances along either side of the building. The eye is at once taken by an unusual variation in showcase lighting. Instead of employing reflector tubes within the case itself use has been made of a succession of reflector-hooded, goose-neck lamps along the top of these counters. While nothing is lost as far as case lighting is concerned, the arrangement serves as well to light whatever may be placed on the glass top of the case.

However, strong inside reflector lamps have been employed in an imposing array of glass-faced electric refrigerators running in cabinet fashion along the rear wall. White in color and tastefully set up with display shelves, these refrigerating cases are distinctly in the "speak-for-themselves" class. The plant, as may be surmised, is operated by electric motor.

Electric refrigeration is further supplied an attractive flower booth nearby. The refrigerating cabinet in this instance is of the usual type, electrically lighted, and equipped with numerous shelves which, when filled, conceal effectually the real nature of the enclosure.

With the curious exception of a print and cotton goods shop near the west entrance, the remainder of the market is taken up by vegetable and grocery displays typical of the freshness and cleanliness of the general establishment. Happily, the impression given by the market in its various departments is one of well deserved prosperity. That the market is in reality filling a long standing need is seen in a daily increasing popularity.

De-Lighted!

A ghost stood in the haunted room
(He'd lived there many a year),
And packed his trunk in ghostly gloom,
With many a ghostly tear.

"I leave the house tonight," sobbed he,
"This room I'll haunt no more
Where I've spooked for one family
Since eighteen-thirty-four!

"I've lost my reputation,
No more I give them frights;
I lose my situation,
They've wired for Tungsten lights!"

Waldo T Davis

Suburbaning

JOY riding is not all of the mile-a-minute, death-daring, death-dealing kind. There is a saner, safer, happier sort, that seeks its realization in the smoothest running, quietest, most luxurious car on earth; joy riding where it is possible to relax on soft cushions and concentrate attention on the passing panorama of town and country; joy riding, with all the worry and trouble and care of motoring removed.

Time was when there were only a chosen few who had been initiated into the pleasures of this sort of motoring; when to experience it was beyond the reach of the ordinary human being and to own a vehicle of this kind was but a Utopian dream. Times have changed, however, and now there is a vast fraternity, and one which is ever growing, which has been initiated into the pleasures of electric vehicle operation. It is the electric vehicle that affords this most joyous of riding.

About four o'clock of a Wednesday afternoon in early October an electric coupé drove through the gates of Longue Vue Inn at Hastings-on-Hudson and up the broad avenue to the entrance way. The car was noteworthy for its dignity, its beauty and its grace as well as for the jolly party which it carried. Scarcely had it stopped and its occupants alighted before another electric entered the grounds, and another, and another, and still another until fully forty cars were parked along the driveway and about a hundred and fifty visitors had swarmed over the lawns and into the dining rooms where afternoon tea was being served. The merry party, which seemed almost like a big family, enjoyed to the full the Inn and its attractions and then, a little before six, car after car filled up and drove

Photographic Bureau of The New York Edison Company

A Few of the Cars in the Fall Sociability Run

away. The event was the Fall Sociability Run of The New York Electric Vehicle Association.

At two o'clock the cars had assembled at the Electric Garage on Central Park West and Sixty-second Street and a few minutes after had started off on their trip. The run to Longue Vue was accomplished in a trifle less than two hours and not a single car participating experienced the slightest trouble of any kind.

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On the Grounds of the Longue Vue Inn, Hastings-on-Hudson

These Association runs have become well settled fixtures in the social calendar of Manhattan. Twice annually, Spring and Fall, they are held, and the number participating each time has grown by leaps and bounds. Last Spring the run led to the Siwanoy Country Club, at Bronxville, Westchester County, New York, and about thirty-five cars took part.

A spirit of comraderie and good fellowship has pervaded each run and back of it all has been a keen enthusiasm and appreciation of the promise and the fulfillment of the electric pleasure car. A majority of the drivers have been women, and this for the reason that the electric is the simplest and easiest of all pleasure cars to manage. Added to its purely mechanical advantages is the fact that for luxury of appointments and elegance of finish no other cars in the world, as a class, are comparable with them.

But women have not been the only participants in the Association's Sociability Runs; there are many men as well who wax enthusiastic over the electric pleasure vehicle and these have formed no inconsiderable proportion of the parties. Doctors, lawyers, and in fact professional men of all classes, have found the electric the ideal car for town and suburban use for themselves and their families.

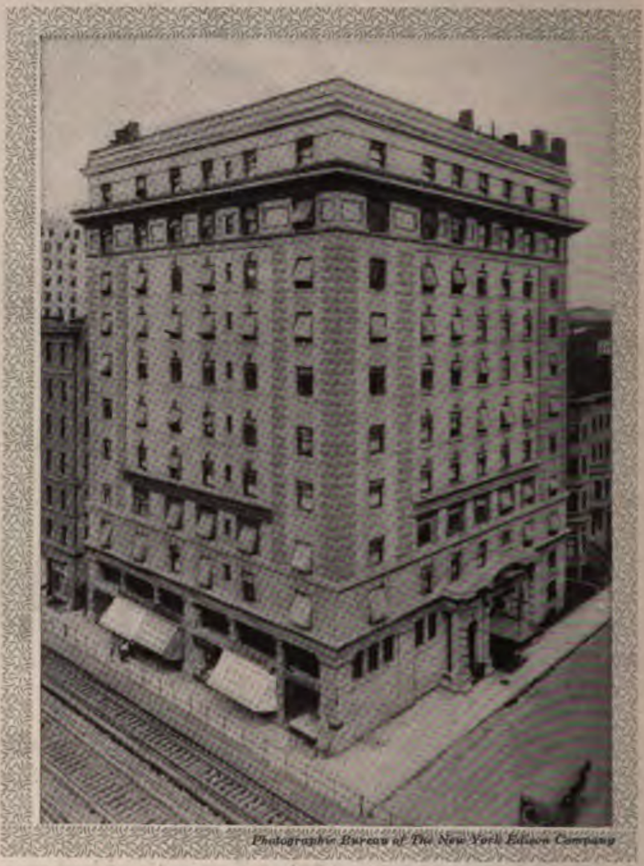
It is the electric's absolute dependability and its freedom from the common ills of motordom which is daily recommending it to an ever-increasing class of the discriminating public and nothing is doing more to prove its all-round serviceability than these semi-annual suburban trips.

La Rochelle

WHILE the model and modern and otherwise up-to-the-minute apartment may lack little, it certainly denies little in the way of accentuated coziness. Indeed, should a New Yorker by any misguided chance resent the dimensions, the chances are he would give up the apartment idea altogether.

On the other hand, he might hear of or happen into "La Rochelle." Once above the two or three floors of possible street distraction here at Seventy-fifth Street and Columbus Avenue the explorer finds before him the refreshing reaches of the Park and to the northward the pleasant green and imposing architecture of the Seventy-ninth Street Plaza.

He is surprised in fact long before getting to the window-gazing stage of the matter. The foyer itself insures that. The building before entering looked like an apartment house. This hall looks like the entrance of a library or a club of metropolitan distinction. Rich in wall coverings and electric fixtures, an imposing staircase near one end, a huge fireplace of bronze and marble at the other, stately chairs and window divans marking its reaches of street and side walls, the interior bespeaks a spacious dignity singular in its age and generation. More unusual is the height of the place. Not content with a single floor, the exotic Frenchman



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La Rochelle at Columbus Avenue and Seventy-fifth Street, an Apartment Development Combining Old-time Dimensions with Modern Effectiveness

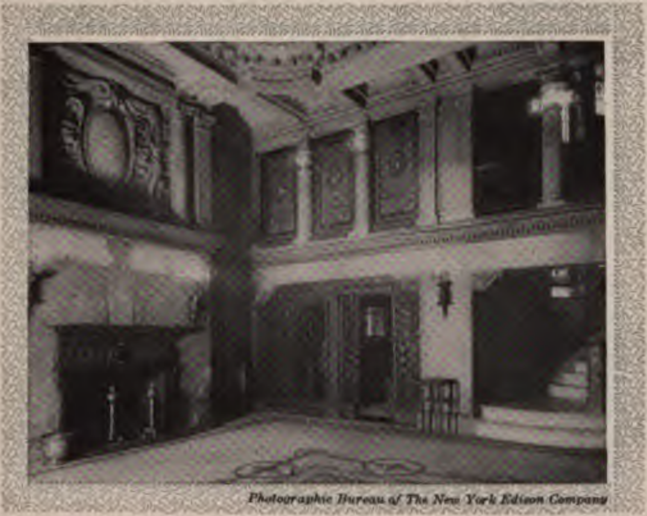
who conceived the plans provided a picturesque mezzanine through the columns of which the windings of the staircase appear at intervals.

But one does not live in the front hall. Abundantly impressed, the apartment seeker boards an electric lift to be elevated to an inspection of whatever quarters may be available. Unless good fortune is available likewise, the selection will be limited.

The prospective tenant is ushered abruptly into the most alluring apartments the occasion affords. Should these happen to be of the eight-room variety the effect is that of a veritable house. Not only are the rooms surprisingly large; the ceilings at every level are correspondingly high. Possibly ten inches have been added to the height deemed ordinarily sufficient. The result is an airiness and expansiveness familiar enough in the old-time dwelling but quite unfamiliar in "efficient" models of apartment construction. What to do with it all is the first question. What to do without it would puzzle the fortunate thirty-eight who with their families have enjoyed its advantages season after season.

By way of furthering the private house impression, the rooms in every case are arranged with something approaching individuality. So far has the idea been carried that probably no two apartments are exactly alike. The private halls, wide and attractive, are extremely varied, the rooms branching off at inviting turns. Parlors and living rooms communicate or otherwise, chambers occur at one end or both, nurseries appear and disappear, and kitchens, while less elusive, are uniformly roomy and convenient. A factor of unfailing appeal is the fireplace in every living room. Though the fact of a grate is not in itself unusual, those in question are. Wide and deep, their mantels reaching well toward the ceiling, these fireplaces give a genuine touch to the homelikeness of the whole establishment.

What has been said in general of the large apartment applies in particular to the small apartment. With fewer rooms, these quarters show at the same time a like liberality in breathing and moving space and a similar attractiveness in arrangement. The rareness with which they become available would argue considerable



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The Entrance Hall, an Impressive Interior of Two-story Height and Elaborate Decorative Effect

about them above the ordinary. A series of extra maids' rooms on the roof and a large and electrically equipped house laundry on the top floor provide incidental but very real inducements. In consequence, "La Rochelle" has developed a patronage of practical permanency.

To its other advantages the house has recently added Edison Service. It must be up to date, certainly. It must avoid, even more certainly, the ruinous coal bills that have been making big holes in its profits for some time past. At present an electric service is assured, reasonable in cost and reassuring in its dependability.

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An Apartment Corner in one of the Smaller Suites. Even Here Generous Floor Space is the Order

Photographic Bureau of The New York Edison Company

The Duplex Idea, joined with a Ceiling Height Usually Found only in the Private House

Barge Wireless

ONE of the biggest wireless contracts on record has been made with the Marconi Company for the equipment of Mississippi barges. These barges, plying between Minneapolis and New Orleans, promise to restore the one-time volume of river traffic. Wireless will be of great value in keeping shippers advised of market conditions and in directing the transshipment of cargoes to take advantage of favorable developments. It will also enable the navigation officials to know at any time the exact location of a barge.

The Electrical Exposition and Motor Show of 1916

THE Electrical Exposition of 1916 reflected in a comprehensive manner the progress of the Nation in industrial efficiency. While critics of our military and naval preparedness have called attention to the need of greater efforts in perfecting the country's defenses; while our lack of a merchant marine may have handicapped our international commerce, few words of criticism have assailed the supremacy of American industries, and above all the electrical industry.

With the attention of the public so expressly directed to Preparedness, it was only natural that this thought should be mirrored by the exhibitors not only in their displays of electrical apparatus for the various industries, but also that the idea should be carried out still further and applied to the home.

Aside from a display of a wide variety of electrical devices for every conceivable purpose in home life, the "Preparedness in the Home" booth was further augmented by two Government exhibits. These were of peculiar significance in showing that the United States as a government for the people is keenly interested in their home life. The Calorimeter Exhibit, based on scientific tests made by Dr Langworthy's Calorimeter, showed how electric household de-

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Its Beams Visible for Miles, the Sperry Searchlight on the Roof of the Grand Central Palace served as a Guiding Beacon to the Electrical Exposition

vices conserve the energy of the housewife, while the Government Canning Plant illustrated the ideal way to preserve food products.

The displays of the Vocational Training Schools of New York were remarkably comprehensive and interesting for the graphic way in which they illustrated the extent to which the city has concerned itself in fitting its boys and girls for the skilled trades. Electric wiring, cabinet work, plumbing, wood working, machine shop, design and home making were some of the exhibits which showed the scope of the training.

A fitting climax to a great success was the visit of Mr Thomas A Edison. An incident worth relating was the awarding of a prize by Mr Edison to Wilson Prock, a vocational school student. This boy had modeled a figure of an Edison Man, which was so excellently done that the president of the Exposition decided to award a special prize to the young sculptor. Mr Edison, learning of this decision, asked if he might present the award.

With practically an entire floor devoted to these school demonstrations, it was only natural that school principals and teachers of New York, as well as from other cities, should be attracted. The registry of such visitors includes the name of educators of country-wide renown. Among these names appears that of Dr John H. Finley of the State Board of Education.

To turn to the industrial phase of the Exposition, the manufacturers'

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The Palatial Aspect of the Main Floor of the Exposition

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Electric Vehicles Played a Prominent Role in the Exhibit. The New York Electric Vehicle Association Headquarters is seen in the Foreground

exhibits indicated the rapid advance of electricity in this sphere. Of particular interest was an exhibit of the manufacture of silk, showing practically every process in the art, from the raw product to the finished gown. All the machines were operated by electric current. There were also a myriad of other exhibits which illustrated the increasing application of electricity to various industries.

The American Museum of Safety exhibit covered, in a practical manner, the broader field of industrial safety. The displays were selected to illustrate standard safeguards for machines recognized as being particularly hazardous in their operation.

American X-Ray Equipment Company—Several types of Dental X-ray machines were displayed by the American X-ray Equipment Company, in an exhibit which showed the application of the X-ray to the practical work of the profession.

Arc Welding Machine Company—Electric welding of iron and steel comprised the exhibit by the Arc Welding Machine Company.

Electric Automobile Selling Corporation—This corporation, representing the various manufacturers of electric industrial vehicles, displayed some interesting placards showing the advantage of the electric over horse-drawn truck.

Guaranty Securities Corporation—As the largest banking institution in the world specializing in automobile credits, the Guaranty Securities Corporation arranged an information booth in which the system of financing the purchase of gasoline and electric cars was explained.

Edward B Stott and Company—The electrical installations in the various booths were the work of this company of electrical contracting engineers.

Anderson Electric Car Company—This Company showed types of electric pleasure vehicles of the latest designs.

Benjamin Electric Manufacturing Company—Illuminating and wiring devices, including a number of types of reflectors, were displayed by the Benjamin Company.

Eastman Machine Company—Various sizes of electric cloth cutters, such as are used in the clothing trades, were shown in the booth of the Eastman Machine Company. Both round knife and straight knife cutters were on exhibition.

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The Sample Board in the Habirshaw Electric Cable Company's Exhibit

Hanovia Chemical and Manufacturing Company—Therapeutic ultra-violet ray lamps were to be seen in the exhibit of the Hanovia Company.

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The Comprehensive Sphere of the Edison Battery was Pointed Out at the Display of the Edison Storage Battery Company

Jules Electric Company—Various types of lamps for the home were exhibited by the Jules Electric Company.

Lansden Company—A police department electric patrol wagon of the type to be used in New York City attracted much attention at the Lansden booth.

Mitchell-Vance Company—A very attractive display of lighting fixtures for the home was arranged by the Mitchell-Vance Company.

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The Widely Distributed Service Organization of the Otis Elevator Company was Featured

Waite and Bartlett Manufacturing Company—Harry R Campbell, Sales Agent, demonstrated The Waugh Radiographic Unit at this booth.

Wappler Electric Company—A comprehensive exhibit of electro-medical apparatus featuring X-ray apparatus and calling especial attention to the latest developments in the electro-medical world was attractively shown by the Wappler Electric Company.

Atlantic Electric Vehicle Company featured a 3½-ton chassis. There was also an assembled jack shaft, the construction of which is largely responsible for the long mileage per battery charge which this manufacturer claims.

The Baker R & L New York Corporation—Two electric pleasure vehicles were to be seen in the booth of The Baker R & L New York Corporation. The first was a Baker R & L Brougham painted a special French gray and trimmed in a very attractive broadcloth to match. The other was a Baker R & L Dual Drive Coach.

Behning Piano Company—The new "Art Electric" piano formed the principal exhibit of the Behning Piano Company. This electrically operated instrument reproduced by means of the artist's recorded music roll the playing of the world's greatest pianists with exact fidelity as to tempo and dynamics.

Bell Electric Motor Company featured single phase, compensated type, polyphase and direct-current motors in its exhibit. The Bell Company also called attention to an 18-inch engine lathe, one of the latest products of its machine tool department.

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The Westinghouse Electric and Manufacturing Company showed a large Variety of Electrical Devices for the Home, Shop and Office

Photographic Bureau of The New York Edison Company

The Fox Electrical Corporation Exhibited Electrical Household Appliances of Every Description

H Boker and Company, Incorporated—As sole agents for Ercole Marelli & Company, Ltd, of Milan, Italy, H Boker and Company, Inc, showed several types of these Italian motors.

Campbell Electric Company—The Campbell Electric Company, under the management of the J W Hughes Company, Distributors, duplicated the exhibit that received the highest honors at the Panama Exposition for X-ray and high frequency apparatus.

H C Biglin and L E Moffatt—An attractive display of De Luxe portable lamps was seen in the booth of H C Biglin and L E Moffatt. Besides showing their own product, as agents of L B Allen & Company, they displayed soldering material for various purposes. There were also the Mueller Attacho Plug, and three products of the Killark Manufacturing Company.

C C Bohn Electric Company — Mahogany table and floor lamps in a number of attractive designs were displayed by the C C Bohn Electric Company. Another interesting exhibit consisted of the various materials now employed in wiring a house. Household appliances were also shown.

Century Electric Company—To illustrate the types of single-phase, alternating current motors for use on moderately heavy machinery, the Century Electric Company showed various motors up to five horsepower. There was also a special display of

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The Various Phases of Industrial Safety were Dealt with by the American Museum of Safety

Photographic Bureau of The New York Edison Company

The Rapid Distribution of Mail in this City was Explained by the New York Pneumatic Service Company

"Century" fractional horsepower repulsion type motors.

Coleman Leasing Corporation — Animated Picture Advertising, invented by Mr George Coleman and shown by the Coleman Leasing Corporation, consisted of a picture which may show any background upon which appear various figures moving from one part of the picture to another, as in "moving pictures." The talking parts provide the opportunity for advertising copy.

Consolidated Telegraph and Electrical Subway Company—The Consolidated Telegraph and Electrical Subway Company showed the method of underground construction in New York City by which electric light and power cables are carried beneath the surface of the streets. The exhibit illustrated how the conduits are separated and the manner in which the safety of the cables is taken care of.

Cooper-Hewitt Electric Company—The photographic profession, particularly the motion picture branch, has for some time been assisted in its work by the wonderful lighting to be obtained through the use of mercury vapor tubes. The Cooper-Hewitt display included these tubes ranging in length from ten to sixty-seven inches.

The Dairy — The Borden Condensed Milk Company illustrated the application of electricity in the dairy. A number of prize cows, Guernseys and Holsteins from the

Photographic Bureau of The New York Edison Company

"The Home Electrical" Characterized the Exhibit of the Western Electric Company dairy farm of the Borden Company, added interest to the display. Milking was done at half-hour intervals during the day and evening with electric milking machines. The De Laval Separator Company supplied the separators, clarifiers and electric milking apparatus used in the exhibit. The stanchion stalls were erected by the Louden Machinery Company.

Duntley Products Sales Company—In connection with its standard articles the Duntley Products Sales Company this year showed a new popular price, light weight, fan type sweeper, equipped with a ball-bearing motor.

Eck Dynamo and Motor Company—A belted running outfit consisting of a motor and a dynamo wired in the usual factory testing manner was exhibited by the Eck Dynamo and Motor Company.

Edison Electric Illuminating Company of Brooklyn—Electricity as an integral part of the household was emphasized in the exhibit of the Edison Electric Illuminating Company of Brooklyn. The large space occupied by the Company's display was divided into five parts, the first being given over to a reception room for the comfort and convenience of the visitors to the Show. A second section was filled with electric household appliances of every description, which was followed by a booth featuring portable lamps of various types. The fourth booth contained motor-driven apparatus, including electric vacuum cleaners, sewing machines, phonograph motors, washing machines and drink mixers. The last space was devoted to a house-wiring exhibit.

Photographic Bureau of The New York Edison Company

A Modern Electric Laundry was Arranged by Wallace B Hart

Photographic Bureau of The New York Edison Company

The Electrical Refrigerating Company had on Exhibition Refrigerators Especially Adapted for Home Service

Edison Storage Battery Company—The Edison Alkaline storage battery, one of Mr Edison's greatest inventions, was exhibited in this Company's booth, and emphasis was laid on the wide sphere of application of these batteries in modern industry.

Thomas A Edison, Inc—The exhibit of the products manufactured by Thomas A Edison, Inc, and distributed by the Seely Office Appliance Company, contained the Edison Dictating Machine and the appliances for the Edison Commercial System:

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The Process of Japanning, using Electrically Operated Machines, was shown by the Oven Equipment and Manufacturing Company

the new Edison Transophone; the Edison Telescribe, and the new Safetae wax cylinders, provided with cloth insertion for additional durability and safety.

Walter S Edmands—The Edmands electric light baker, designed for the treatment of neuritis, arthritis, rheumatic joints, lumbago, and abdominal troubles, was demonstrated by Walter S Edmands.

Electric Bakery—Every process of bread and cake making was carried on under ideal sanitary conditions, and with the latest and most improved devices at the Electric Bakery. All of the machinery and equipment for this bakery was supplied by Jaburg Brothers. Through the co-operation of the New York City Board of Education and the United Master Bakers of New York, students of the Murray Hill Vocational School, of which Dr Morris Segal is the principal, operated the bakery.

Electric Garage—In the exhibit of the New York Electric Garage were shown electric pleasure vehicles of the very latest designs. There was also a comprehensive working exhibit of the newest charging apparatus used in private garages.

The Electric Storage Battery Company—With the attention of the public directed toward the submarine in these war times, the exhibit by The Electric Storage Battery Company of storage batteries adapted for use in the undersea vessel was of especial interest.

Electrical Merchandizing—a monthly magazine of the electrical trade, illustrated the fact that it is the answer book for the contractor, for the dealer, for the central station man, for the jobber, for the salesman and for the manufacturer.

Electrical Refrigerating Company — A domestic refrigerator equipped with an electrically operated refrigerating and ice-making machine was the subject of an interesting exhibit by the Electrical Refrigerating Company.

Electrical Review and Western Electrician—This well-known electrical weekly, now in its thirty-fifth year of continuous publication, showed files of the magazine dating back to the first copies.

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The Arc Welding Display was of Special Interest to Metal Workers

Photographic Bureau of The New York Edison Company

Electricity as an Integral Part of the Household was Emphasized by the Edison Electric Illuminating Company of Brooklyn, the Easy-Payment House-Wiring Plan being Explained

Electrical Testing Laboratories—The exhibit of the Electrical Testing Laboratories illustrated the wide variety of tests undertaken by this company. Aside from a number of interesting mechanical tests, a Vreeland oscillator and a photometric apparatus were demonstrated.

Electrical World—The "Electrical World," a comprehensive, widely read, and authoritative publication, dealing with the serious side of the electrical industry, showed a number of copies of the magazine.

Emerson Phonograph Company—The Electrolier and Emerson records were included in the exhibit of the Emerson Phonograph Company.

Everyday Mechanics Magazine—The exhibit of the magazine consisted chiefly of the models constructed in the experiment station. One of the most interesting of these was a five-foot scale model of a Lake submarine, completely equipped and controlled by wireless from a shore station.

Robert Findlay Manufacturing Company—At this company's booth was a complete assortment of lighting fixtures of unusual design and high grade manufacture. Ceiling fixtures for all types of direct, semi-indirect and indirect lighting were featured together with side-wall brackets and table lamps.

The Fox Electrical Corporation—A comprehensive exhibit of electrical household appliances was seen in the booth of the Fox Electrical Corporation. The display included percolators, irons, chafing dishes and other electrical devices for the home.

Frantz Premier Company—An attractive booth arranged as a reception room for visitors to the Exposition also afforded an opportunity for the Frantz Premier Company to display its electric portable vacuum cleaners.

General Electric Company—The three sections of the General Electric Company display were occupied respectively by the Fort Wayne Department, the Research Laboratory and the Edison Lamp Works of General Electric Company. In the first section there was an interesting arrangement of fractional horsepower motors and small motor generator sets manufactured by the Fort Wayne Department. The exhibit prepared by the Research Laboratory included X-ray plates of flowers, the human body, as well as industrial plates. The processes followed in the manufacture of Edison Mazda lamps were shown in the lamp works booth.

The General Vehicle Company exhibit this year was particularly interesting to coal merchants and business men who use heavy trucks. A five-ton coal truck was shown equipped with a steel dumping body with a capacity of 210 cubic feet. The G V Industrial Truck or "Electric Stevedore," as it is called along the water front, was also exhibited.

Photographic Bureau of The New York Edison Company

Show-Window Lighting, Industrial Power Applications and Electrical Appliances, Constituted the Main Features of the United Electric Light and Power Company's Display

The Goulds Manufacturing Company had in service a three-stage centrifugal pump, direct connected to a 7½ horsepower 1700 R P M General Electric Motor. In addition several other types of pumps were shown.

Habirshaw Electric Cable Company—Samples of rubber-insulated cables were arranged in the booth of the Habirshaw Electric Cable Company. The principal types shown were underground, low and high tension, submarine, mine, and torpedo cables, National Code wires and automobile wires and cables.

Photographic Bureau of The New York Edison Company

"Preparedness in the Home" was the Keynote of the Whole Exposition

Hamilton-Beach Manufacturing Company—A very attractive assortment of small motor-driven household and commercial labor-saving appliances was exhibited at the booth of the Hamilton-Beach Manufacturing Company.

Wallace B Hart—A completely equipped electric laundry in full operation comprised the exhibit of Wallace B Hart. Soiled clothes entered the laundry and passed through the various machines until they emerged at the other end fresh and clean and ready for the linen closet. The machines used in the exhibit were the Cataract Washer, the Roma Ironer, and the Perfection Drier, all of the latest types.

Hartt and Morison—Electricity for light, heat and power, as applied to a great variety of devices, was presented in the comprehensive exhibit of Hartt & Morison. A number of types of lamps and electric household appliances were shown.

Home Devices Corporation—A display of washing machines especially adapted for use in the home was arranged by the Home Devices Corporation. These washers were different from the usual type of machine on the market in that the washer cylinder can be used in the stationary tubs which are found in the average city home.

The Hoover Suction Sweeper—Several types of suction sweepers were demonstrated by the Hoover Suction Sweeper Company.

The Hotpoint Electric Heating Company—The exhibit of the Hotpoint Electric Heating Company was in two divisions, one a consumer exhibit, and the other for the dealer. In the former section demonstrations were given of various of the famous Hotpoint Electrical appliances. Special attention was called to the question of cooking by electricity on electric stoves, and five models of Hotpoint ranges were displayed.

Hurley Machine Company—Electric laundry equipment made up the exhibit of the Hurley Machine Company, the Thor Electric Home Washing Machine, the Thor Ironing Machine and the Thor Electric Vacuum Cleaner being included in the demonstration.

Innovation Electric Company, Inc—The Innovation Electric Company, Inc, one of the pioneers in the manufacture of vacuum cleaners, showed and demonstrated the "Magic" and "Liberty" models.

Ivanhoe-Regent Works—The Ivanhoe-Regent Works of General Electric Company exhibited glass and metal reflectors for all types of lighting. The display was divided into three groups—Rozelle Glass and Decolite for home lighting; scientifically designed Regent and Holophane reflectors for the illumination of spaces where efficiency of operation is of principal importance; and Ivanhoe metal reflectors and fittings for industrial and outdoor lighting.

The Oven Equipment and Manufacturing Company—Electric japanning was featured at The Oven Equipment and Manufacturing Company booth, the process being one of considerable industrial importance.

Kinetic Engineering Company—The Kinetic Organ Blower exhibited by the Kinetic Engineering Company was to be seen in operation connected to a church bellows.

Photographic Bureau of The New York Edison Company

Another View of the "Preparedness-in-the-Home" Exhibit, with the Bronx Booth at the Left

Landers, Frary and Clark booth offered a suggestion for a model arrangement of an up-to-date electrical merchandise department to demonstrate the uses of Universal electrical appliances. The exhibit included a complete display of both cooking and heating apparatus.

Lux Manufacturing Company—The Lux 40 and 60 watt Lunars, the smallest daylight lamps in the world, were featured at the Lux display. These Argon gas-filled lamps were

Photographic Bureau of The New York Edison Company

Methods of Underground Construction were Illustrated by the Consolidated Telegraph and Electrical Subway Company

encased in natural blue glass which eliminated all undesirable red and yellow rays, the resulting light being the closest approach to daylight obtainable.

Manhattan Electrical Supply Company—With the almost universal use of wireless telegraphy, the exhibition of wireless telegraph instruments by the Manhattan Electrical Supply Company was of particular interest. A wireless telephone was also in operation, connecting a similar station located in another booth.

Metropolitan Engineering Company—Protection, coupled with efficiency and economy as applied to the careful development and improvement of electrical apparatus, particularly that used by central electric stations, was well illustrated in the exhibit of the Metropolitan Engineering Company.

The Metropolitan Electrical Products Company, Inc—A complete assortment of all the better makes of electrical household heating appliances was included in the exhibit of The Metropolitan Electrical Products Company, Inc.

Samuel L Moore and Sons Corporation—Industrial electric motor trucks for use where package freight is handled formed this company's exhibit. These vehicles, which are

Photographic Bureau of The New York Edison Company

The Manufacture of Silk Fabrics, using Electric Machines, was one of the most Popular of the Exhibits. The H R Mallinson Company arranged the Display essentially miniature electric trucks, have a carrying capacity of 4,000 pounds and operate at a speed of six miles an hour when loaded. Thirty miles can be obtained from one charge of batteries.

National Lamp Works—Aside from displaying the newest types of incandescent lamps, the National Lamp Works of General Electric Company illustrated the application of these lights for various purposes.

The New York Edison Company—The work of its various departments in meeting the electrical requirements of the city comprised the varied exhibit by The New York Edison Company.

The Company's advertising activities were shown in sample specimens of letterheads, noteheads, follow-up-return cards, booklets and poster-stamps. Newspaper advertising was also shown.

Photographic Bureau of The New York Edison Company

A Miniature Central Station System was the Principal Feature at the New York and Queens Electric Light and Power Company Booth

National Scale Company—National Counting Machines and National Chapman Elevating Trucks exhibited by the National Scale Company comprised a "Factory System" designed to reduce the cost of all counting, weighing, checking and estimating processes, as well as loading, unloading and trucking operations. The National Calling System was another time and money saver shown by the National Scale Company.

The Bureau of Education in collaboration with the Educational Committee of the Employees' Association exhibited charts giving a synopsis of the courses taught in the Commercial, Technical and Accounting Schools.

A completely equipped electric hospital offered an unusual opportunity of seeing the latest electro-medical appliances that are in use today. The dental clinic formed another section of the hospital, and was equipped with a dental chair, oxygen-gas apparatus, and an X-ray machine for dental photography.

The exhibit of the Illuminating Engineering Bureau consisted of a three-room flat, arranged to show different lighting effects.

The display of the Information Bureau showed how The New York Edison Company has equipped its main and branch offices with Information Bureaus to provide prompt and efficient service for the public. In addition the Bureau served as an information centre for the Exposition. A Telautograph system was in operation in the booth, and was connected with the Stereopticon Bulletin Board.

The photographic industry found much of interest in the display by the Edison Photographic Bureau. The feature was a model electric-studio, where photographs were taken under several different kinds of electric light.

The New York Electrical School—Photographs and charts were exhibited, giving a good idea of the work carried on by this institution.

Photographic Bureau of The New York Edison Company

The Advance of Electricity in the Photographic Profession was Explained in the Electric Studio

New York Electric Vehicle Association—Several of the newer types of electric passenger cars were exhibited in the booth of the New York Electric Vehicle Association. In addition to the cars themselves, the Association showed some of the latest accessories for electrics.

New York Pneumatic Service Company—A duplicate installation of the sending and receiving stations as found in the post offices of the city, was shown by the New York Pneumatic Service Company. There was also a car and a section of the track of an automatic electrical tubular railway. The Lamson Company exhibited a pneumatic tube, a cable system for conveying papers and other light articles, and a belt conveyor. Many of the carrier systems were in actual operation at the booth.

Photographic Bureau of The New York Edison Company

The Signal Corps of the United States Army had an Instructive Exhibit

New York and Queens Electric Light and Power Company—A feature of the exhibit by the New York and Queens Electric Light and Power Company was the miniature central station system for the generation, transmission and distribution of electrical energy. The exhibit also included a display of the latest electrical appliances for household use.

The Ohio Company—The different types of suction sweepers and their essential parts formed the features of the exhibit of The Ohio Company.

The Otis Elevator Company featured principally its widely distributed service organization which covers the world. Maps and illustrations were used to show the extent and comprehensiveness of this service. A Standard Otis electrical control board and cabinet was shown containing the necessary repair parts for this and other types of controllers.

A C Penn, Agent for The Waterbury Wallace Company, Incorporated — The Wallace Model "C" Lamp, the Two-arm Extension Bracket and the Wallace shades were the three features of this exhibit.

Philadelphia Storage Battery Company—The Philadelphia Storage Battery Company exhibited in detail the component parts of its "Diamond Grid" Thin Plate Battery for electric vehicles and for starting, lighting and ignition purposes.

Pittsburgh Electric Specialties Company — Electrical appliances of novel design and more than usual popular appeal were exhibited by this company. These included vacuum cleaners, sewing machine motors, electric irons and other household devices.

Preparedness in the Home — This exhibit, under the auspices of the New York Woman Suffrage Party, showed in a practical and scientific manner how the woman of today may conserve her time, health and energy by using modern electrical household devices. In conjunction with this exhibit there was a laboratory where both technical and practical tests were made of laundry, kitchen, pantry, dining-room and general household devices, by people especially trained in this work.

Photographic Bureau of The New York Edison Company

The Booth of the General Electric Company Included Displays of Motors, Edison Mazda Lamps, and X-ray Plates showing Company Research Work

One corner of the laboratory was fitted up as a dressing room. Here were all the electrically operated devices that could be desired by even the most fastidious. There was also a large living room where the smaller devices were seen in operation.

At the same booth was a complete Government canning plant, electrically equipped and in full operation, where methods of canning, as approved by the Government experts, were to be seen. The Government also called attention to the results of a series of scientific tests made by Dr. Langworthy's Calorimeter which showed the vast contrast between the expenditure of energy in using the old-fashioned household devices and the modern electrical labor-saving equipment. These exhibits were arranged in co-operation with the Bureau of Home Economics of The New York Edison Company.

The Prometheus Electric Company—The Prometheus Electric Company exhibited electrically heated instrument, dressing and water sterilizers for dental and surgical work.

Photographic Bureau of The New York Edison Company

The Bottling of Milk was one of the Exhibits in the Electrically Equipped Dairy

The Regina Company—A number of different styles of vacuum cleaners were exhibited by the Regina Company.

The Reimers Manufacturing Company featured a multiple heat iron with a finger-tip control of current.

The Ritter Dental Manufacturing Company—Two of the latest devices for the modern dental office were seen in the exhibit of The Ritter Dental Manufacturing Company. These were the Columbia Automatic Compressor Unit and the Columbia Distributing Panel.

Shelton Electric Company—Sixteen electrical specialties were exhibited by the Shelton Electric

Photographic Bureau of The New York Edison Company

Efficient Office Equipment with the Edison Inventions was to be Seen in the Thomas A Edison, Inc, Booth

Company. Among these were an automatic phonograph motor, a sewing machine motor with a foot control giving six speeds, a new high frequency machine, a small, compact automatic drink mixer, a centrifuge for testing oils and other liquids, and a tiny dental motor.

H R Mallinson Company—Practically every process of silk manufacture, from the silkworm to the finished gown, was shown in this exhibit. A number of silkworms were imported from the Orient, so that visitors at the Exposition might have an opportunity of seeing these industrious little insects at work. The products of these worms were put through the various stages of "throwing," "unskeining," "spooling," and "weaving." The fabric was then made into gowns which were displayed on a model. The looms shown have a capacity of from ten to forty yards of silk a day and could accomplish everything in the line of intricate weaving except that of the old hand looms of France.

Universal Electric Welding Company—The actual operation of various types of spot-welding machines was demonstrated at the Universal Electric Welding Company booth. The action of the spot weld fuses metals, as a result of their own resistance, to a current of high amperage.

The Steynis Ozone Company exhibited ventilating apparatus adaptable to direct and alternating 110-120 volt circuits. A very efficient water sterilizer, whereof the electrical part is placed in operation as soon as the faucet is opened, was also shown.

Stransky Manufacturing Company—The X-ray-lite semi-indirect lighting unit was exhibited by the Stransky Manufacturing Company.

Strauss and Company—The booth of Strauss and Company contained a variety of electric signs and flags.

Telautograph Corporation—The intercommunicating Telautographic Service exhibited by the Telautograph Corporation gave an excellent illustration of the adaptability of this apparatus for the varied uses of large hotels, banks, railroad stations, factories and other business enterprises. The Bulletin Board was served by one of these machines.

Photographic Bureau of The New York Edison Company

Some of the Latest Designs of Electric Pleasure Vehicles were in the Electric Garage Section

William Truswell and Sons—The contracting firm of William Truswell and Sons had a display of photographs illustrating its work, and showing the various types of electrical illumination which have been installed.

Photographic Bureau of The New York Edison Company

Bread Making was to be Seen in the Electric Bakery Fitted up by Jaburg Brothers

The Tucker Agency, Inc—Modern Public Service Advertising was featured in the exhibit of The Tucker Agency, Inc.

The Tucker Electrical Construction Company—The Tucker Electrical Construction Company, organized in 1887, one of the oldest contracting houses in the business, showed a number of photographs of the firm's work.

United Electric Light and Power Company—The space occupied by the United Electric Light and Power Company was divided into three units, each of which served to illustrate certain phases of electrical service—show window lighting, industrial power applications and electrical appliances. The appliance booth contained smaller booths designed and decorated to represent four household rooms. This arrangement served as a background for a display and demonstration of electrical appliances suitable for use in each room or in the household in general. The show window section demonstrated the contrast between good and bad store lighting. One of the windows was illuminated according to the method employed in a number of retail establishments, with exposed Mazda lamps. The second window was

Photographic Bureau of The New York Edison Company

The Improvement of Apparatus used by Central Electric Stations was shown by the Metropolitan Engineering Company

dressed precisely in the same way, but employed concealed lighting, emphasizing the difference in illumination and selling value of a well-lighted window.

Between these two exhibits a complete printing plant was installed, containing printing presses, linotype machines, composition racks, paper cutting and binding machines operated entirely by alternating current motors. In this space "The United Electrologue—The Exposition Daily"—was published and distributed.

The Universal Winding Company—The Universal Winding Company showed in practical operation two magnet winders. One wound coils such as are used by the United States Government in wireless telegraph service, and the other was adapted for winding the new "Universal" coil, which is attracting much attention in the electrical industry.

Victor Electric Corporation—Physicians, surgeons and dentists found in the exhibit of the Victor Electric Corporation a very complete line of electro-therapeutic appliances.

Walker Vehicle Company—With the economical and satisfactory application of electric vehicles to a large part of city and suburban hauling and delivering, the one-ton adaptable chassis exhibited by the Walker Vehicle Company was of much interest.

Ward Motor Vehicle Company—The Ward Motor Vehicle Company featured the "Ward Special" electric delivery wagon, the lightest of their line of commercial electric vehicles. This car was equipped with an Edison Battery.

Western Electric Company—In the cottage-like exhibit called "The Home Electrical," the Western Electric Company displayed the household helps that interest the up-to-date housekeeper. The innovation was a portable electric sewing machine. The entire equipment, the sewing machine head, together with a small electric motor and a specially designed speed control in the form of a foot-operated rheostat, was completely enclosed in a highly finished oak cover. The same model washing machine that was exhibited last year was to be seen in operation in a model kitchen. A small electric dishwasher, especially adapted to use in a city home, the electric range and miscellaneous utensils were also seen in this kitchen.

Photographic Bureau of The New York Edison Company

The Yonkers Electric Light and Power Company specialized in a Display of Electric Household Devices

Photographic Bureau of The New York Edison Company

Domestic Science Class of Washington Irving High School at Work in the Apartment Class Room

Westinghouse Electric and Manufacturing Company—The Westinghouse Electric and Manufacturing Company had an attractive exhibit illustrating the use of the various electric devices manufactured by this company for the home, shop and office.

The S S White Dental Manufacturing Company—The present-day development of the electric dental engine was shown in the exhibit of The S S White Dental Manufacturing Company. A dental chair, equipped with an electric engine, instrument table, electric light and other conveniences—all in one unit—formed the principal part of the exhibit. Anæsthetizing apparatus, X-ray equipment, were also shown, while a die-sinker's engine completed the display.

The Yonkers Electric Light and Power Company — Modern household appliances operated by electricity formed one of the many interesting divisions of The Yonkers Electric Light and Power Company's exhibit.

The Yonkers Chamber of Commerce exhibited through its Real Estate Board with the electric light and power company, explaining the commercial, industrial and residential advantages of Yonkers. Photographs of all parts of the city were shown. The Chamber of Commerce exhibit was supported by the Eagle Felt Works, Incorporated, manufacturers of felt hats for men and boys, and the National Sugar Refining Company. The Eagle Company had two machines in opera-

Photographic Bureau of The New York Edison Company

Boys of the Murray Hill School Studied Machine Work

Photographic Bureau of The New York Edison Company

The Girl Students of the Manhattan Trade School demonstrated their Ability in all Forms of Needlework

tion, one of which removed the fur from the rabbit skin, and the other took the hat when nearly completed and shrunk it to the proper size. All the power was electrical. The work of wrapping individual lumps of sugar in paper in the Refining Company display was done by an electrically driven machine, capable of wrapping 7,500 lumps in an hour. These interesting processes were carried in the Yonkers booth.

City, State and Government Exhibits

Board of Health—The Board of Health co-operated with the Power Bureau of The New York Edison Company in conducting a ventilating exhibit. The aim was to show the importance of proper ventilation in places of business, of amusement and in the home.

Calorimeter Exhibit—The Government is becoming more and more interested in the task of increasing the comfort and efficiency in the households of the country. Illustrating this work, were the scientific tests made by Dr. Langworthy's Calorimeter. These tests showed the huge contrast between the expenditure of energy in using the old-fashioned household devices and the modern electrical labor-saving equipment.

Census Bureau—It takes a complex organization to find out just how many people are living in the United States, and to show the public how efficiently the work is done the Department of Commerce carried on part of the work of its Census Bureau at the Exposition.

Photographic Bureau of The New York Edison Company

The Electrical Class of the Vocational School for Boys

Department of Foreign and Domestic Commerce—With the European War has come an enormous increase in South American trade, which formerly was absorbed by England and other countries. The Department of Commerce exhibited the products that are now being sent to the United States.

Government Canning Plant—Good food makes good citizens, and with this in mind the United States Government has taken pains to show the housewife how to can food products properly. Under the direction of Mr Benson, of the Department of Agriculture, a canning plant equipped with electrically heated insulated ovens and fireless cookers was operated.

Photographic Bureau of The New York Edison Company

The Power Bureau of The New York Edison Company exhibited the Modern System of Electric Ventilation

New York State—In connection with the work done in perfecting the canals in New York State, an unusual exhibit was arranged showing a model of a syphon lock and a syphon spillway. In this way the details of operating the canal system were illustrated. A model terminal warehouse was to be seen, showing the work of unloading a coal barge by means of an electric crane.

The Students' Booth—The Students' Booth was conducted as a reception room for college, high school and vocational school students of New York City and vicinity.

United States Army—The part the automobile plays in battlefield communication was shown in the Army Signal Corps exhibit, a motor truck, carrying all the apparatus required for telephone, telegraph and radio signaling forming the central part of this display. In addition to the signal truck there was a portable radio equipment which can be carried on horseback to points that are inaccessible to automobiles. This outfit includes a generator which is operated by hand, and a complete wireless set.

United States Navy—At this time, when a large increase in the size of the United States Navy has recently been authorized, the exhibit of the Navy Department was of peculiar timeliness. The large booth which was devoted to Naval apparatus was arranged by the Navy Electrical Class and was crowded with interest to all who would keep in touch with the affairs of the nation. Electrical devices were featured, and to the

Photographic Bureau of The New York Edison Company

The Panel of "Edison People" which formed the Background of the Advertising Bureau's Exhibit

uninitiated, their number will be illuminating. A 60-foot model battleship twelve feet high, with fire control masts, funnels, turrets, signal lights and searchlights, was shown. The interior wiring, means of communication and fire control of a modern battleship, a model layout constructed by students of the electrical class of the New York Navy Yard, was in continuous operation. The Publicity and Recruiting Department of the United States Navy exhibited a complete electrically controlled dry dock, models of the battleship Oklahoma, the destroyer McCall and many of the ships of the old Navy, sounding machines, a Whitehead torpedo, diving outfits and electric crane.

Vocational Schools—The Vocational Schools' exhibits were conducted under the supervision of the Board of Education. Vocational School for Boys, of which Dr Charles J Pickett is prin-

Photographic Bureau of The New York Edison Company

On October Twenty-first, the Anniversary of the Invention of the Incandescent Lamp, Mr and Mrs Thomas A Edison visited the Exposition cipal, had exhibits of wood-working, printing, clay modeling, sheet metal work, commercial designs and electric flasher signs. The Murray Hill Vocational School, whose principal is Mr George J Loewy, conducted a printing establishment, a sign painting, drawing and blueprinting exhibit, an automobile maintenance and repair shop, and a plumbing and electric wiring exhibit. The Manhattan Trade School for Girls, which was a pioneer in vocational work, has become one of the most effective of the public trade schools. Miss Florence M Marshall, the principal of the school, exhibited the following branches of the school work: cooking, garment designing, straw and braid hat making, embroidery, buttonhole making and hemstitching. The Domestic Science Department of the girls' high schools of the city conducted a co-operative domestic science exhibit and a model apartment. The schools participating in this exhibit were Julia Richman High School, Washington Irving High School, Morris High, Manual Training High and Girls' High School, Public School 115, Public School 85 and Wadleigh High School. Pratt Institute represented the training classes of the private schools.

At The Electric Show

Then Progress came and took my hand—
"See what I've wrought!" cried she.
I looked upon a wonderland
Of glowing mystery;
'Twas daylight, radiant and new,
Within a magic wall;
'Twas man-made Eden fair and true
And waiting at my call!

Then Progress waved her artful hand—
"Gaze on my work!" cried she.
I looked and marked her fill the land
With care-free liberty;
For lo, 'twas ours by simple touch
To rouse a mighty slave,
Who knew no day but serving much
And through the long night gave!

Then Progress smiled and with raised hand—
"Behold my pow'r!" cried she.
I looked—she stood the queen of land,
And sky, and foaming sea;
"And I will serve you, if I may,
With gifts till now unthought;
And you shall share this wondrous day
The silent years have brought!"

Roscoe Gilmore Stott

Inventors' Competition—One of the features of the Exposition was the inventors' competition, the purpose of which was to bring out new and worthy uncommercialized electrical inventions. Three prizes were awarded in this contest. The first was won by Philip G Benholz, of Constableville, N Y, who entered a selective signal telephone system for use on rural party lines. James A Dempsey, of New York City, received the second award for a combination direct and indirect lighting fixture. The third award was made to Sylvestro Milano, of the Bronx, for an electrical device for detecting gas. The Committee of Awards consisted of William P Morrison, Chairman, James P Sparrow, and A V A McHarg, well-known electrical engineers.

Cathedral of St John the Divine

The Chancel and the Chapels of the Tongues are Wonderfully Suggestive of what the finished Cathedral of St John the Divine will be Like

Manufacturers and Agents (Continued)

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Low Voltage Direct Current Bell Ringers

U S E M Co—301 West 37th St

Motors

General Uses

Allis Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
Russell & Co—444 Columbus Ave
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St
Westinghouse Elec & Mfg Co—165 Broadway

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Mad Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building, Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St

Refrigeration

Automatic Refrigerating Co—50 East 42d St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Mad Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—1790 Broadway
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Snow & Co—531 W 46th St
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St
Wertheimer Sign Co—558 W 36th St

Manufacturers and Agents (Concluded)

Sign Flashers

etts—511 W 42d St
fg Co—624 Broadway
Elec Co—1123 Broadway

Supply Dealers

Manhattan

c Co Inc—116-118 W 29th St
c Supply Co—62 Vesey St
c Co C C—820 6th Ave
Co J H—32 Park Pl
o The—69 South St & 1800 Park Ave
lectrical Supply Co—4 West 16th St
Nugent & Kranzer Inc—110 W 30th St
Electric Co—109-115 W 26th St
E—55 Barclay St
o David—57 Murray St
Co E B—4 Murray St
hn J—48 Dey St
Chas W Inc—133 Liberty St
n Electrical Supply Co—17 Park Pl,
st 42d St, 127 West 125th St
itan Elec Products Co—101 W 42d St
itan Elec Supply Co—76 W 36th St
Equip Co—35 Vestry St
& Co W R—22 Dey St
ectrical Supply House—62 Essex St
stern Elec Sup Co—114 W 27th St
man—19-21 West 36th St
& Son—4 E 8th St
Betts Co—105 Hudson St
lec Co—463 West St and 105 W 40th St

Bronx

c Supply Co The—612 Melrose Ave
stern Supply Co The—506 Willis Ave
upply Co The—558 Melrose Ave

tro Plating Apparatus and Supplies

ctric Co W—81 Nassau St
Loeb Co—50 Church St

Specialties

amp Corporation—52 Vanderbilt Ave
Co W A—132 Church St
ec Co Wm S—3 W 29th St
o Chas E—201 Fulton St
rbon Co—114 Liberty St
mmer Mfg Co The—50 Church St
ele Mfg Co—472 18th St Bklyn N Y
ountain Co The—348 W 42nd St
emier Distrib Co Inc—119 W 42d St
ll Co—105 W 40th St
le Co of N Y The—341 B'way
Eng Corporation—237 Lafayette St
e Adv Co—17 Battery Place
thur—114 Liberty St
h Electric Spec Co—412 8th Ave
Elec Stage Light'g Co—240 W 50th St
ovelty Co Inc The—25 E 24th St
Mfg Co—111 No 3rd St Brooklyn
ctric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—35 Vestry St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Ave
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James—119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—1790 Broadway
Fox Electric Corp (Eden) 119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cataract—46 E 41st St
Home Devices Corp (Modern)—Bush Term Bklyn
Hurley Machine Co—147-157 W 42nd St
Kandem Electric Co Inc—49 E 21st St
National Sewing Machine Co—290 Broadway
Sibley Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Westinghouse Elec & Mfg Co—165 Broadway
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Construction Company
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 444—Russell & Co
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Fifth Ave 75 —H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Electric Company
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Electric Contracting Company
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Electric Construction Company
West 31st St 109—Jandous Electric Equipment Company Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—New York Electric Installation Company
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Manufacturing Company

Motor Requirements for Various Machines

Paper Box Manufacture

Service	Required H P
Scoring machine	.1
Corner-cutter, 3⅜" and 5" knives, double corner	.5
Straw-board slitter	.5 to 1
Nailing machine	.25
Cornering machine	.1
Corner stayer	.125
Downing machine	.5
Slitting machine	.5 to 1
Wire stitcher	.125
Wrapping machines—A—14½"	.5
Crimping machines	.333
Tin press	.666
Tube roller	.25
Swedging machine	.25
Spiral box machine	1.
Covering machine	.25
Baling press	5.
Dextrine mixer	2.
Liner and dyer	2.

Miscellaneous

Service	Required H P
Chemical grinding machine	15.
Rope hanker	1.5
2 in. pipe drawing machine	10.
Rib knitting machine	.166
Round knitting machine	.166
Stamp canceling machine	1 to 2.
Horse groomer	2 to 3.
Churn	.5 to 2
Addressograph	.5
Cloth cutter	.125 to .25
Carpet cleaner	5 to 10.
Dishwasher	.5 to 5
Weaving machines	1 to 5.
Carpet sewing machine	.25
Ordinary sewing machine	.125
Ink mill	2 to 7.5

Department Stores which Sell Electric Appliances

Adams-Flanigan Co, Westchester & Third Ave, Bronx, Basement
Barnett Bros, Col'bus Ave & 74th St, B'm't
*Bloomingdale Bros, 59th St & Third Av, "
John Daniell Sons, 759 Broadway, Basement
*Gimbel Bros, 6th Ave & 33d St, Fifth Floor
*J B Greenhut & Co, 6th Ave & 18th St, B'm't
H C F Koch & Co, 132 W 125th St, Basement
Lewis & Conger, Sixth Ave & 45th St, 1st Floor
Liggett-Riker-Hegeman Drug Stores
Lord & Taylor, 5th Avenue and 38th Street 5th floor
*James McCreery, 5 W 34th St, Sixth Floor
*R H Macy & Co, B'way & 35th St, Bas'm't
Rothenberg & Co, 34 W 14th St, Basement
Stern Bros, 41 W 42d St, Fourth Floor
*John Wanamaker, B'y & 10th St, 7th Floor

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*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

Cooper Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Bklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Smith-Eldridge Co Agents)—39 Cortlandt St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey St Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent)—236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—Mt Vernon NY (C&P)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St

Manufacturers and Agents (Continued)

Charging Apparatus (Concluded)
Industrial Controller Co—50 Church St
Lincoln Electric Co Cleveland O
(Read-Dresser Eng Co—149 B'way Agents)
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries
Cutler-Hammer Mfg Co—50 Church St
Edison Thomas A Inc—141 Lakeside Avenue Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Mfg Co—165 B'way

Mechanical and Battery Parts
Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—527 W 23d St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42d St
Phila Storage Battery Co—American Building B'way and 58th St
Storage Battery Supply Co—239 East 27th St
United States Light & Heat Co—16-24 W 61st St
Walker Vehicle Co—531 W 46th St
Willard Storage Bat Co The—228-30 W 58th S

Buffers—Polishers

Fort Wayne Electric Works of the General Electric Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303-305 Fifth Avenue
Hospital Supply Co The—53-55 5th Ave
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Av
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Bway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—35 Vestry St
Neel-Armstrong Co—2017 Fifth Ave
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 8th Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—5th Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St, 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 East 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 West 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 Broadway
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 West Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
National Elevator Co—62-64 W 45th St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—649 W 43d St
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Gerdes Theo R N—123 Liberty St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St
Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—649 W 43d St
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
Kandem Electric Co Inc—49 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 Broadway

Globes—Reflectors

Dealing William—1 Hudson St.
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42nd St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn, N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—649 W 43d St
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialties Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio

Heating and Cooking (Concluded)

Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St

Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Spring 9890
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
124 W 42d St	Bryant 5262
151 East 86th St	Lenox 7780
27 East 125th St	Harlem 4020
362 East 149th St	Melrose 9900

All offices open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts west of the Bowery and south of Catherine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street east of and including the Bowery, and north of and including Catherine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

397 Water Street

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N F Brady, President
Joseph Williams, Treasurer
Lewis B Gawtry, Secretary

New York has witnessed many instances of spectacular outdoor illumination. Almost every occasion of either a public or semi-public nature has seen some new evidence of the skill of the illuminating engineer.

For magnitude, the flood lighting of buildings and monuments, a method which had its inception at the California Expositions, is about the most impressive that has yet been created. But there are other phases of outdoor lighting which, while lacking somewhat in the spectacular as measured by mere bigness, are none the less important. Recent development along these lines offers pleasing evidence that illuminating engineers are keenly aware of the requirements, and even the present limitations of their art. Probably the most noteworthy example of this progress is the lighting of the lake front at Central Park on the occasion of the recent festival of Song and Light by the New York Community Chorus.

* * *

Wholly artistic in conception, with no thought of the utilitarian,—that is of a commercial application,—the electrical arrangements for Song and Light were radically different from any previous attempt at outdoor illumination. Suspended high in the trees, swinging from branches or strung from tree top to tree top, the many light sources blended in an harmonious whole, producing a flood of softened light.

The whole scheme was the work of the architect, Mr. Claude Bragdon, and the thoroughness of the artistic preparation may be better understood when it is known that three years were required in the making of the geometric designs for the plate glass screens that shielded the various incandescent lamps.

The new method bids fair to find its place as a part of the general festival scheme in New York's vast program of outdoor celebrations.

* * *

Upwards of one hundred and seventy thousand people were privileged to see the actual playing of the recent World Series ball games. Many times that number in cities all over the country followed the playing of the games through the medium of mechanical score boards. And while the thrill of the swat was lacking and imagination had to picture the details of the work of the fielders, the fact remains that this method of watching World Series play is decidedly satisfactory even to the most rabid fan. Incidentally electricity is once more found to be filling an important part in the affairs of the multitude.

There are different types of these play reproducing devices. In one, motion picture films show the movements of the players, and nine men are required behind the scenes to operate the mechanism. So life-like is this reproduction that one not only follows the curve of the pitched ball, but sees it leave the bat, to be caught by a waiting fielder or to land in safe territory. The course of the runner around the bases is shown, and even the umpire with his fatal, over-the-shoulder gesture is not forgotten.

◆

For outdoor reproduction, as seen on the boards of many newspaper offices, the method is somewhat different. In this case discs represent the batter and base runners, and the positions of the fielding team are shown by puppets, whose motions are actuated by springs. Then the blackboard and chalk method has its adherents, the plays being described in writing.

Within a very few minutes after each actual play had been made, fans who from choice or otherwise were unable to be at the field knew what had taken place. The speedy reporting of the game was made possible only through the use of current in the service of the telephone and telegraph, while in the operation of the mechanical playing devices electric lights and motors played various parts.

◆

While there may be feelings of regret at the passing of the ancient art of the wood engraver even the most ardent antiquarian cannot but concede that the modern method of reproducing illustrations is far superior. As compared with the procedure of scarcely thirty years ago, wherein a highly skilled artisan spent several days in cutting on wood the lines which would reproduce a picture, half-tone engraving, representing as it does development in photography, chemical research and the application of electricity, has been known to deliver the finished plates to the printing press twenty minutes after the original picture was taken.

This commercial art occupies so large a place in our every-day business life that it receives hardly more than passing thought. Difficult as it is to imagine our magazines and newspapers without their numerous illustrations, the fact remains that but for the art of the photoengraver these same pages would lose much of their interest. Ordinarily it is now only a matter of hours to have the finished half-tone ready for the press. Less than thirty years ago, it was a matter of days for a wood engraver to get his blocks in shape.

◆

For nearly six centuries the art of the wood engraver flourished as the only practical means of reproduction. Thousands of men had devoted their lives and their skill to the exacting work and then—so recently that many of the old artisans are now commanding figures in the new art, photo-engraving came into being.

The beginning of the half-tone process was in 1881, but it was in the early nineties that the new method came into general use. It is significant that during this same period the art of electric lighting, upon which half-tone reproduction depends to such a large extent, was also in its early stages. Thus, in a large measure they have developed together.

Decoration by E Horter

Christmas Eve

On such a night, long, long ago,
In Bethlehem town,
In David's town,
Above the wondering city, lo!
With light as from a jewelled crown,
Out of the East a star shone down
On seraphs winging their white way
And Magi hastening where One lay,
A King, upon a bed of hay.

On such a night, a thousand hearts
Both princes' hearts,
And vagrants' hearts,
Beat first as one, though merged in parts.
The toilworn, weary, full of sin
First let themselves be gathered in.
And some at last grown nobly mild,
Led by the hand a Little Child,
Feeling at peace because He smiled.

Two thousand years! Tonight it seems
That Bethlehem town,
By Galilee,
I vision in a dream of dreams!
Rather I hearken One who speaks
As over clouds and mountain peaks
The Voice is saying, "Listen, Brother,"
"Gentle be to one another"
"For ye are children all of God"
"And keepers each one of the other."

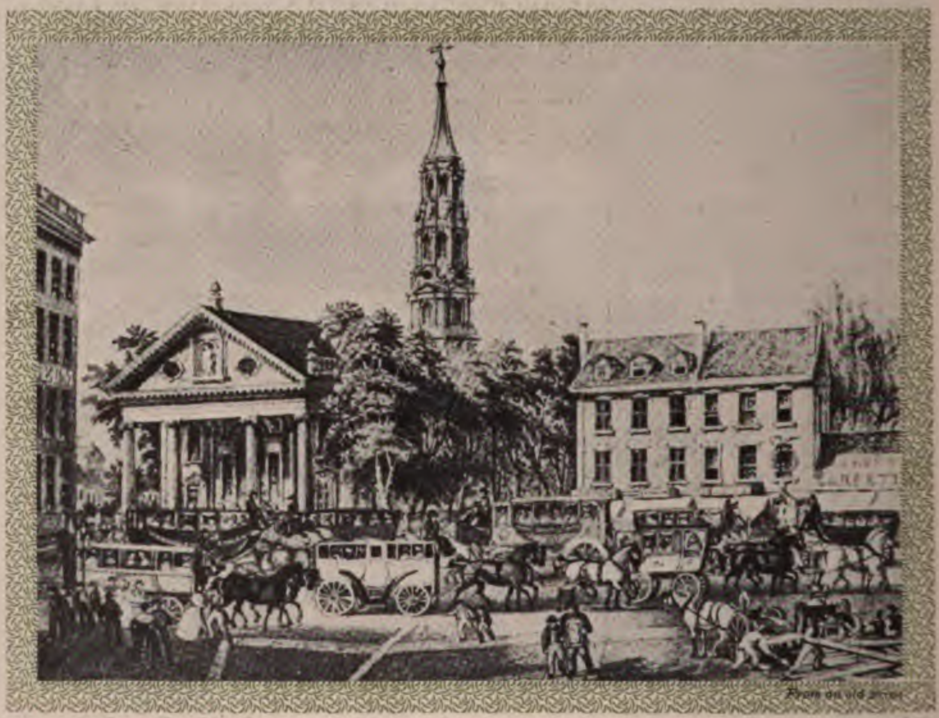
Louise R de Cravioto

St Paul's–since 1766

IN observing last month the hundred and fiftieth birthday of St Paul's Chapel, not only those taking part but the thousands following from a distance found themselves merged, so to speak, in the more eventful happenings of Revolutionary and early Republican annals. To the progressively minded the old edifice will prove to have aligned itself with the spirit of its launching as readily as with the improvements and conveniences of modern times.

One reads in the deliberate record of Manhattan's settling that Broadway and the west side remained neglected long after the East River shore was fairly populous. From the backbone of the Island to the Hudson, were fields, orchards, gardens, broken only by the occasional outline of a public house. Broadway, vague and vaguely defined, ended in "The Fields," now City Hall Park.

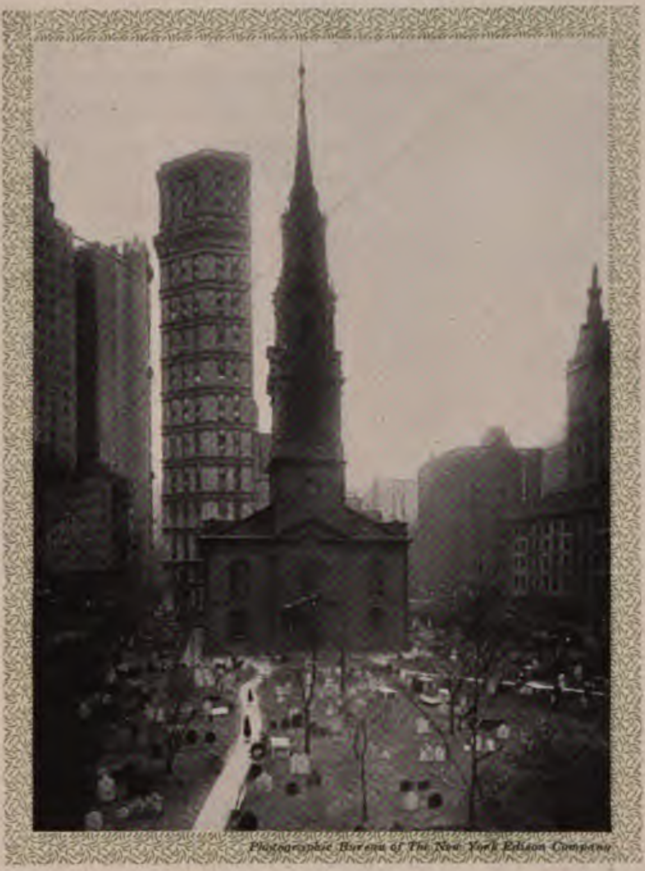
In the early 1760's on a line with Broadway where it touched the southwest corner of "The Fields" was a flourishing wheat field. Whether suggested symbolism or practical calculation decided the matter cannot be said; at any rate it was here in the waving grain that Trinity Parish determined to erect a chapel. The care and deliberation marking the



From an old print

A Glimpse of St Paul's during the early 1800's when Broadway was largely residential undertaking are seen in the mixing of the mortar six months beforehand to insure its durability when used.

Work on the chapel was begun in the spring of 1764 under the direction of a certain McBean, a pupil of Gibbs, the illustrious architect of St Martins-in-the-Fields which St Paul's so much resembles. Its completion was accomplished by Fall, two years later. The pride and wonder of the town, the new church was opened with much ceremony in the presence of the Governor, the Mayor, generals, jurists, and a crowd of notables generally.

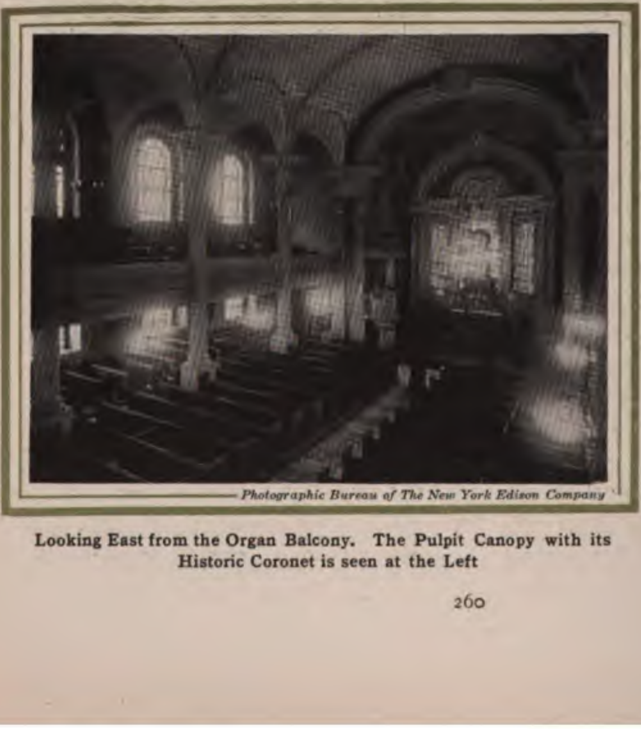

Photographic Bureau of The New York Edison Company

The Facade that once overlooked the river. Taken from the Parish House at the western end of the Burying Ground

Events in the new chapel parish moved smoothly for a decade until political tension with the Mother country became acute. Trouble came to an abrupt head in the closing of the doors owing to the refusal of the clergy to omit prayers for the King in the liturgy. The chapel was re-opened along with others of the denomination on the occupation of New York by Lord Howe. The re-opening as far as St Paul's was concerned was doubly momentous as the service took place on the night succeeding the Great Fire in which the building had had a remarkable escape. Trinty itself was a heap of ruins and remained so until well along in the Republican regime. St Paul's in consequence became the prominent church of the community.

It was here, in a manner befitting, that Washington, after his inauguration on the balcony of the old City Hall at the head of Broad Street, and his address to both branches of Congress in the Senate chamber, proceeded with his official family for a Te Deum. The President, moreover, attended here regularly until the rebuilding of the burned Trinity.

The chapel, now well established in affairs, formed the setting of one of the more moving incentives to the 1812 unpleasantness. British cruisers employing the "right of search" had shot to pieces an unoffending schooner about to enter New York harbor. The bodies of such victims as were recovered were borne solemly through the streets to St Paul's where impressive funeral services were held. The effect of these solemnities on the populace may be imagined. St Paul's somewhat later was the scene of the historic service over Montgomery's remains. Last but no less important among these nationally telling events was the crowning function in the city's memorable welcome to Lafayette. This took the form of a sacred concert in St Paul's at which the New York Choral Society may be assumed to have done its very best. Tickets, the old announcements assure us, were one dollar.


Photographic Bureau of The New York Edison Company

Looking East from the Organ Balcony. The Pulpit Canopy with its Historic Coronet is seen at the Left

The interior, within which the chapel welcomed the incidents referred to, embodied a simplicity typical of the time. Walls of plain gray varied only by subdued stained windows, angular and unadorned pews, and a lofty arched ceiling, sparcely stenciled, blent and for that matter, continue today in harmony with the church's plain and candid exterior. Apart from a liberal array of memorial tablets reticent in form and wording the place offers little of variety except two large mural crests marking the pews where Washington and Governor Clinton once worshipped. Close against the side walls and well under the balcony these pews of state reveal an official preference differing somewhat from the fourth row—centre—of modern requirements.

A relic of unique interest presides over the pulpit canopy in the shape of a prince's coronet with protruding plumes richly gilded: the insignia of the Prince of Wales. This meaningful carving managed in some way to escape the wrath of the Sons of Liberty who on their memorable march down Broadway destroyed every sign of royalty in sight, including the statue of the King in Bowling Green and the crowned tops of the tall fence posts surrounding it. In fact the St Paul's coronet is one of New York's few survivals of royal insignia.

Photographic Bureau of The New York Edison Company

The Broadway Entrances lead the Visitor in past the Chancel

The history of the chapel since the stirring times related has been in effect the history of the city itself. With a frontage that once looked out over a slope of fruitful fields to the River, the church presently found itself the centre of a swirl and growth of affairs never perhaps paralleled. The very River was made to recede from its former banks at Greenwich Street to its present limits and every foot of land within eyeshot came to support its quota of office buildings.

Today the old church surrounded by its ancient graves must admire perforce the engirdling skyscrapers, listen to the rumble of the "L" and the passing of incalculable traffic, and blend as best it may with the life of it all. Its windows alight with the same element that gleams from the towers about it bespeak an attempt, at least, to keep abreast of the age.

Foreign Notes

A British munitions tribunal recently heard cases against four employees of an electrical storage battery company who refused to work overtime on a certain day the month preceding. The men maintained they should have a day's notice but that they were unwarned until the same day. The defence culminated in the fact that they had not brought their tea with them.

The electrification of the great cotton mills of Bombay is well under way. Motors approximating 36,000 horsepower have been installed, divided among 26 mills, in addition to complete sub-station equipments of 30 cotton mills and two flour mills.

Photographic Bureau of The New York Edison Company

The Tomb of General Montgomery on the East Porch. The Services Attending its Consecration were long Memorable

Brushing Up

A SCHOOL for Street Cleaners and a model district in which they may put their recently acquired theories into practice is one of the latest manifestations of New York's progressiveness. The simple statement of this fact, however, gives no idea of the extent to which the Street Cleaning Department has committed itself in an attempt to give Manhattan the finest service in the world. Dustless dust removal has become the slogan of the Department. Its practical accomplishment is being made possible largely through the agency of electricity—electricity supplied by The New York Edison Company.

Photographic Bureau of The New York Edison Company

The Department of Street Cleaning's Model Dock at Nineteenth Street and the East River. Four Movable Electric Cranes are Used Here

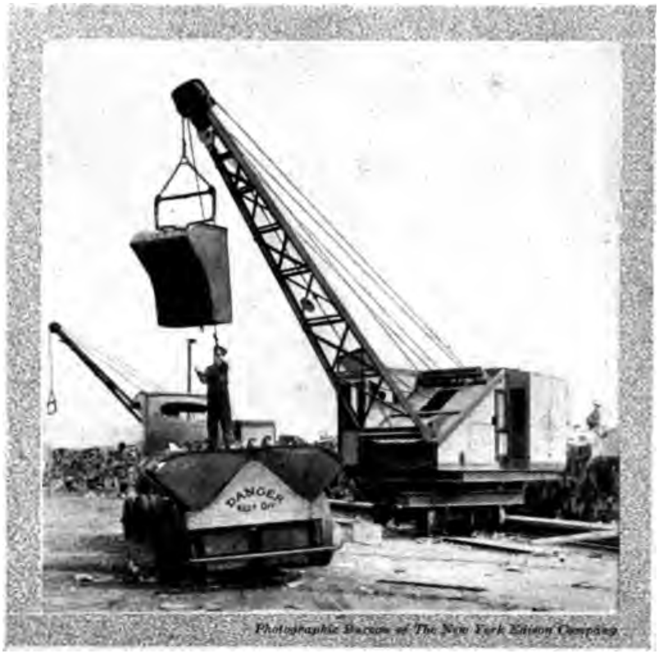
Too often in forward movements of this kind the tendency has been to follow precedent to the extent of taking over old equipment and old methods as a whole and adding here a touch and there a touch, seeking to speed up and improve the system without really going to the foundation and building up anew. In this recently organized Model District of New York's Street Cleaning Department, however, everything which savored of the old has been swept aside and an entirely new system, based on new equipment, new methods, and a new mental attitude has been developed.

In the Model District are included the Fifth Avenue shops with their motor lined curbs and wide airy spaces as well as the less pretentious markets and stores of Second and Third Avenues where automobiles give place to push carts and the elevated railroad casts its shadows. It embraces both tenement houses and the homes of millionaires, and factories, stores and offices of all sorts and conditions. All the problems of city street cleaning are to be met within the boundaries of this cosmopolitan district.

The city dock at Nineteenth Street and the East River was taken over as headquarters, and on it has been erected a structure which is unique in many respects. Lockers and showers of scrupulous cleanliness and modern design, together with other rooms for the men, a training school, a garage, a repair shop and offices all are provided.

The training school affords room for speculation as to just why something similar was not instituted years ago. The room which has been fitted up for this purpose is equipped with models of most of the apparatus which the men are called upon to use. A life-size wooden horse occupies one corner, and is fully harnessed and unharnessed during each demonstration. A gasoline motor, mounted on blocks, stands next, and the men are enlightened as to its intricacies as thoroughly as at any automobile school. Sections of pavement are painted on the floor to represent blocks and asphalt, and also the various types of man-holes. On these the recruits are instructed in the gentle art of wielding a broom. There are various other branches of training such as a thorough drilling in department routine and etiquette.

The mechanical equipment of the Nineteenth Street dock is remarkable in that it resembles more closely that of a huge industrial plant than what one would expect to find at a city dump. Four self-propelled electric cranes run on tracks along either side, taking their current from a third rail which is covered over as in railroad construction. An engineer sits in the cab of each of these cranes and as the collection carts come in lifts the refuse containers bodily from the truck, carries them over to the barge and there dumps them. The new type collection wagons which have been introduced as part of the district equipment are so constucted that there are separate compartments for ashes and other sorts of refuse, and when one of these reaches the pier it travels from one crane to the other, each



Photographic Bureau of The New York Edison Company

Electric Crane Lifting Steel Container from one of the multi-compartment Refuse Cars emptying the proper refuse containers.

These electric cranes, which have proved to be time and labor savers beyond even the expectations of those who were responsible for their installation, take the place of the old method of backing a cart up to the edge of the dock and there dumping its contents. The fact that but one man is required to operate one of these cranes as compared to the half dozen who were always necessary to accomplish the old dumping method, accounts for the economy effected, as does also the fact that an entire truck can be dumped, and out on its route again, in about half the time that was formerly required for a truck of much smaller capacity. As a great deal of work on the docks is now accomplished at night a lighting system of considerable effectiveness has been laid out, and each of the cranes carries lamps to illuminate its own work.

The huge tractors which have been adopted to collect the city's waste material have already become familiar sights in the district between Forty-second Street and Fourteenth Street. These, manned by crews of five men, go through a block with a speed and resultant cleanliness marvelous to the eyes of New Yorkers accustomed to the more familiar methods in use elsewhere in the city. The tractors themselves operate on the gas-electric principle, although straight electric vehicles are also taking their place in the Department, a large tractor and two 1½-ton collection carts now being in daily operation in the district from 140th to 183rd Streets.

It is a far cry indeed from these ultra modern days back to 1695 when the first contract to clean the city's streets was awarded, entailing an annual expense to the taxpayers of one hundred and fifty dollars.

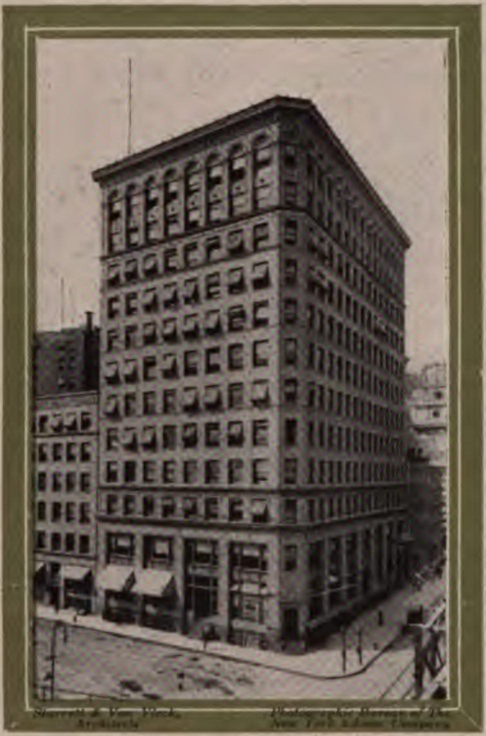
Photographic Bureau of The New York Edison Company

A Corner in the Class-Room of the Department of Street Cleaning's Training School

From Cabin to Skyscraper

FROM a one story log cabin to a twelve story office building, boasting the very latest in construction and equipment is a matter of about two hundred and sixty years, if one may judge from the history of the plot of ground near the apex of Manhattan Island, One State Street.

As far back as 1655, so tradition has it, this site was occupied by a cabin which was the property of an Englishman, Thomas Baxter. Thomas might not have been known to fame but for the fact that he had a quarrel with the Dutch authorities of New Amsterdam and was forced to flee to New England. With the little colony of Rhode Island, as a base, he undertook in retaliation, the delights and ardors of a pirate's life, managing to become an object of considerable aversion to his one-time neighbors.


Sharrell & Van Vleck, Architects
Photographic Bureau of The New York Edison Company

One of the Historic Building Sites in Manhattan, is now occupied by the South Ferry Building

It is not strange to relate that, in view of these facts, his cabin was confiscated and was later torn down to make room for Peter Stuyvesant's gardens, adjacent to his "White Hall." Upon the cabin's demolition, however, it was discovered that its foundations were of an unusually fine construction and with characteristic Dutch providence they were left intact. For how long a period they were allowed to lie as a warning to others who might have aspired to emulate Captain Kidd is a matter of pure speculation, but certain it is that by 1776 a three-story, red brick, gable-roofed mansion, whose rooms were destined to become the familiars of many of the infant republics great and near great, had risen upon them.

In 1790 this house was occupied by John Coles, one of New York's most famous merchant princes, and his neighbors included most of New York's elite. Battery Park was then an "elegant resort" and the row of houses along State Street, which faced it, marked the height of many a man's ambitions. Robert Goelet and Major-General Morton both resided along the block front and many a time did the latter review his troops from a balcony overlooking the park. At Nos 11 and 13 State Street was Peter Bayard's famous resort. Here were to be had wines and delicacies which would have delighted the gods, and many a mile from Manhattan did the fame of Peter's turtle soup extend.

Photographic Bureau of The New York Edison Company

A Large, Well Lighted Office Suite in the South Ferry Building

Such were a few of the early glories of State Street. Glories which but few stop to contemplate in these days when on the corner of State and Whitehall Streets stands a twelve-story office building, and only one of the old residences, No 7 State Street still remains intact. It was in No 1 State street that Robert Fulton lived for the four or five years immediately preceding his death. After the struggles and discouragements of his early years it was here that he settled back to enjoy the full measure of homage which was finally tendered him.

By 1855 fashionable New York had moved up town to Washington Square and by 1860 the Battery was no longer considered "elegant;" Third Avenue had ceased to be a particularly fine road for a Sunday afternoon drive; Stuyvesant's Sunfish and Cedar Ponds had long been filled in and the old houses had one by one been deserted by their residents. One was used as an immigrant station, another as a seaman's tavern, and still others as cheap boarding houses. Slowly, as the years passed, the old row was demolished and in 1914 the house which had sheltered Fulton and the two which adjoined it were torn down, leaving No 7 to stand alone.

The building which rose over these ruins, at State and Whitehall Streets, was at one time to have been named the Fulton Building. The name would have been singularly appropriate but a more practical consideration later contributed a name which fitted the conditions of the section better: the South Ferry Building.

From South Ferry, just below the building, now radiate all of the elevated and subway lines of Manhattan, the main surface lines and many ferries. Battery Park, once the play ground of fashionable New York, has now become the centre of the export and import business of the greater city. In close relation, one to the other are now situated on the very tip of Manhattan: the Custom House, the Produce and Maritime Exchanges and the heart of the steamship, transportation, coal, lumber, and allied trades. Here, in the natural course of events has come the South Ferry Building, providing office space for custom house brokers, foreign consuls, maritime lawyers, and railroad and industrial corporations.

Photographic Bureau of The New York Edison Company

Nautical Instrument Manufacturers Find the South Ferry Building a Convenient Location

The building itself, which was designed by Starrett and Van Vleck, is of Italian Renaissance of simple, attractive and substantial dignity. The street facades are of limestone with polished granite base and terra cotta trimmings and the entrance hall has a barrel vaulted ceiling with hanging lanterns, and side walls in imported Rosato marble harmonizing with the heavy bronze of the elevator doors.

Every recent improvement in architecture and mechanics and the best and most durable materials have been used. The framework of the building is of skeleton steel and the foundations were carried down to bed rock. These are but details but they are indicative of the thorough type of construction which the South Ferry Realty Company insisted upon throughout. The electrical equipment, which is supplied with current by The New York Edison Company, is fully in keeping with the modernity of the building. Semi-indirect lighting is used both in offices and halls. Five large electric passenger elevators of the most approved type, and equipped with the latest safety devices and flashlight systems, also draw their motive power from the lines of New York's all-embracing Central Station system.

From the upper windows of the building a splendid panoramic view of Battery Park and the harbor is to be obtained which gives those inclined an opportunity to picture to themselves the little old town of "Nu Iarck," of which one State Street was once the center, and to muse upon the kaleidoscopic changes which have made of it, within such a remarkably brief span of years, the greatest city of the world.

A Community Christmas

IN New York where idealism is said to be dead, where sentiment is looked upon as having been stifled by commercialism, and where it is believed, matters of finance have crowded all things that are beautilful to the wall, was developed "the most delightful innovation of the Century"—the Community Christmas Tree. The symbol of Yuletide, that has stood forth in Madison Square each holiday-week since 1912, is now an accepted institution in Manhattan.

But it is not so much of the big tree itself that we speak as it is of the influence that it has had upon the rest of the country—indeed the rest of the world, for since 1912 the Community Christmas Tree has become an international custom, even finding its way into war-worn France and Germany. In this short space of time the tree has become significant of Christmas in America, symbolizing the community spirit and the feeling of fellowship that at this season prevail throughout the country. How much the Tree of Light has done toward bringing about this new idea in Yuletide observance is a matter for speculation. Some feel convinced that the tree has had all to do with it; that it has engendered community spirit and developed a feeling of brotherhood among the masses.

Drawn by Moorepark

The Original Community Christmas Tree made its Appearance in New York in 1912

Certain it is that the Community Christmas Tree has been welcomed everywhere. In the few years of its existence it has found its way into thousands of cities, towns and villages, and this year the Tree of Light will blaze forth from coast to coast, California harboring it as well as snow clad Maine.

And with the Tree of Light have been revived noble customs of several generations ago; the singing of waits in the streets is an instance. In Boston, Cleveland, Baltimore, Milwaukee and scores of other cities groups of citizens travel the thoroughfare on Christmas eve, carrying lanterns and giving voice to Adeste Fidelis, The First Noel, and other old English songs. And the lighted windows indicate that all are eager to have their homes the stopping places of the singers. Cleveland sends out more than a score of bands of school children every Christmas eve to carol through the streets of the city. These youngsters have previously been drilled and trained by the Music School Settlement and as a result their efforts are highly in keeping with the occasion.

It is doubtful whether the group of New Yorkers who organized the first Community Christmas Tree foresaw the wide influence that their work would have. There is no question but that they have been instrumental in establishing hundreds of community trees throughout the country. Working incognito, they have aided the people in scores of cities to establish the Tree of Light. They have given suggestions as to organization and planning and they have taken an active hand in arranging musical programmes and a host of other details. Who these workers are is a matter of mystery to the country, for so far, not one single name has ever been identified with the Tree of Light or the almost national movement that is being conducted in the interest of the Community Christmas. "Tree of Light," P O Station G, New York City, is the one identification behind which these people hide, and no one knows who or how many are behind the working organization of the committee. Even in accepting contributions no names are revealed for all money is sent to "Tree of Light," Account, of Union Trust Company.

It has been the desire to keep all names silent in connection with the tree, and how well those interested have succeeded is evident from the fact that so few know who organized the custom in the first place. Yearly the great tree is donated by some one, yearly it is erected in Madison Square Garden, and decorated with its myriads of colored electric lights. Remarkable programmes of music and other forms of entertainment are arranged by some one and for a week or longer the tree brings joy to thousands.

Dolls—A Little Family History

DOLLS and doll-making have changed. The first dolls were carved by hand, history telling us that one Pusello an Italian of Padua made wooden copies of the statues of the empresses and other famous women of the Roman Empire, which he later sold at the Court of King Charles of France early in the fifteenth century. This, as related by Dr Gustave Schlegel, is said to be the first record of dolls in history.

Present day doll-making is much the same wherever you go; a mixture containing certain ingredients, some of them secret, is cooked and then poured into moulds which form the faces. After due process of hardening the moulds are opened, the figure dried, and then colored.

At the factory of the Aetna Doll and Toy Company, the secret of the art is in the mixture which produces a really unbreakable doll. The new process was invented in Russia by A. Hoffman who brought his ideas, protected by patents, to New York several years ago. The inventor sold his business to the present Aetna Company which now carries it on according to the Hoffman methods.

An interesting characteristic of the Aetna factory, which makes it possible regardless of climatic conditions, to produce the daily output of five thousand dolls, is the refrigerating system. After the dolls have been moulded they must be dried throughly before the finishing work can be begun. Under the old process it was customary to stand them on racks and let nature do the rest. This was all very well on a dry day, but on a hot day or when the humidity was high it was almost impossible; not only were the dolls slow in drying but many collapsed and were lost.

With the present system, dolls are placed in drying boxes. At one end of these is a refrigerating coil, and at the other, a motor-driven blower. The blower keeps the air in circulation blowing it against the pipes which catch the moisture and freeze it. In this way there is continual circulation of cold, dry air, which desiccates the heads rapidly and without any danger of collapse. Refrigeration is obtained from a forty-ton plant, driven by a motor of ten horsepower.

Nor is the refrigerating plant the only part of this doll factory that is operated by electricity. Motor-driven grinders and polishers are used to finish the rough figures as they come from the moulds, and a motor-driven air compressor is used for painting the hair and cheeks.

Electric current required for this interesting installation, totalling seventy-five horsepower in motors, and two hundred lights, is supplied from the mains of The New York Edison Company.

Photographic Bureau of The New York Edison Company

A Corner of the Electrically Cooled Department in which the Dolls are Removed from the Moulds and Dried

By Way of Illustration

STEP by step, in the manufacture of half-tone and line-cut plates of copper and zinc, for printing purposes, electricity has simplified and perfected the processes involved. Before the commercial uses of electricity were developed or even contemplated, hand-cut copper plates were used, but later, with the development of photographic methods, mechanically exact photo engravings became possible.

It has only been within the past twenty years, however, that a line-cut or half-tone plate has been produced, complete, within an hour of the actual taking of the photograph. Even the hour, which is a short enough time when one considers the details, has, in newspaper work, been cut down to a bare twenty minutes from the time of receiving the negative to actual running on the presses. This speed is possible only through the application of electrical methods to the older art.

The making of both copper and zinc plates presumes practically the same steps save that the copper work, which produces the half-tones, is much finer. The use of the words half-tone and line-cut explain themselves. That is, a half-tone plate shades off from a solid black, through all the grays, to white, and likewise with the colors. A line cut, on the other hand, gives only a black and white impression.

It is interesting to follow the various steps in the production of the plates required in the make-up of the Edison Monthly. They are typical of the sort used in all high grade publications. "By Way of Illustration," the heading of this article and the page headings, "The Edison Monthly" represent the simplest form. These are line cuts, printed originally by hand on cardboard and then photographed by powerful lenses. A print is

Photographic Bureau of The New York Edison Company

An Electrically Operated Cut "Routing" Machine made, from the negative, on zinc which has been coated with an emulsion similar to that on the ordinary photographic plate. The zinc plate is then developed, the developing process eating away the emulsion which has not been exposed to the light. This leaves a negative impression, with the metal bare where the lines are to appear. The plate is then rolled with an acid-resisting preparation, called in the trade, "dragon's blood," which sticks to the bare surface. After this treatment the plate is immersed in a nitric acid bath which eats away the zinc, save where it is coated with "dragon's blood." This leaves the plate completed but still in the rough.

The copper plates on which the half-tone illustrations for this article are made go through practically the same process. The fundamental difference is that the prints from which the cuts are produced are photographed through a screen, somewhat similar to window screening. The mesh, though, is infinitely smaller, running from sixty-five to two hundred squares to the square inch. This produces a negative with a checkerboard effect, the screen stopping the light in a regular geometric design. When this negative, in turn, is used to print on the sensitized copper, the same effect is produced, each square being practically a plate by itself. The whole is then coated with an acid-proof

Photographic Bureau of The New York Edison Company

High Powered Electric Arcs are Used in the First Step of the Photo-Engraving Process

Photographic Bureau of The New York Edison Company

The Etching Room, where Electricity Plays an Important Part

fish glue and the plate is immersed in a bichlorate of iron bath. The same action takes place as with the zinc, each square being eaten out to a depth varying according to the amount of copper exposed. This makes possible the shading of the color from full strength down to its lightest shade, for when one of these plates is running on the press the highest point comes in closest contact with the paper and makes the darkest impression, while that part which has been eaten away makes a lighter impression.

One of the most up-to-date photo-engraving plants in New York City is that of the Sterling Engraving Company in the Hill Building. Here at every step of the work, where it is possible to do so, electricity is employed. Five huge, automatically focusing cameras are each flanked with two twenty-six ampere arc lamps which throw their rays directly upon the frames holding the prints to be photographed. So powerful is the illumination afforded that the exposures run but little more than a minute and a half each.

The next phase of the operation in which electricity plays a prominent part is to be found in printing upon the copper and zinc. Ordinarily for smaller sized negatives a printing frame provided with hand clamps is used, but where the plate to be made exceeds fourteen by seventeen inches in size it has been found that the pressure exerted is too uneven to make a satisfactory print. Hence a vacuum printing frame has been devised with a motor attachment which pumps the air from the back of the copper plate, the vacuum thus created exerting an even pressure.

Motors have likewise been made to perform a useful purpose in the actual etching of the plate and their introduction has reduced the time consumed by this operation to one-eighth of what it formerly required. Instead of hand rocked trays, the plates are now placed upright in a square tub and the acid is spattered over them by means of a motor-driven paddle wheel.

The finishing processes are likewise greatly facilitated by electric drive, the routing out of the excess metal in line cuts, the beveling of the edges and nailing of the plates on the blocks being all accomplished by motor.

Salving Grace Church

ATTEMPTS at prolonging the life of stone work in this climate have been many. These in every case have consisted of a coating of one sort or another supposedly waterproof and actually of very transient value against the action of frost. A new method involving an entirely new idea and depending upon motor power for its application, deserves remark.

To the thousands who daily have hurried up and down lower Broadway, the venerable structure of Grace Church no doubt seemed to have changed little. The walls and pinnacles of the original building looked grayer and rustier, to be sure, and even the new marble addition facing the lawn had taken on a subdued yellow that promised an early blending with the whole. None, perhaps, of the swiftly observing crowds suspected that back of this picturesque ageing had developed a sinister disintegration of the stone itself, a weathering penetrating far beneath the surface and threatening the edifice with complete ruin.

Realization of the Danger

When Grace Church was erected eighty years ago not only the best in design but the best in material the country afforded was used in its building. Westchester, New York marble, the whitest and finest and hardest within reach, was requisitioned both for the details of Gothic tracery and the walls themselves. That such construction would last an age was assumed at the time and appears to have been assumed by succeeding generations.

The first hints of trouble were leaks appearing in the joints of the arched ceiling. Even then the cause was judged to be local, as it was assumed that these leaks came from defects in the metal roof. But on close inspection it was found that they were caused by the deterioration of the stone allowing percolation of moisture into the interior.

Later on with increasing frequency, roof and side wall leaks occurred in unlooked-for places discoloring neighboring surfaces and resulting in the well warranted apprehension of the church authorities. The condition of the entire stonework has but lately been realized. Slenderly lined parapets were observed leaning at warning angles, pinnacles were tipped to unpleasant degrees, rosettes and keystones were crumbling and falling, and the main-supporting walls displayed ominous cavities literally eaten out of the solid stone.

The destruction of the old Church and the erection of a new one were seriously considered. However, the loss of an immensely valuable artistic structure of this kind caused the search for some method of preserving it.

At this juncture, fortunately for the old church and in contrast with the usual divergence of fault and remedy, appeared one George Whigelt chemist and exhaustive student of weather effects upon stone.

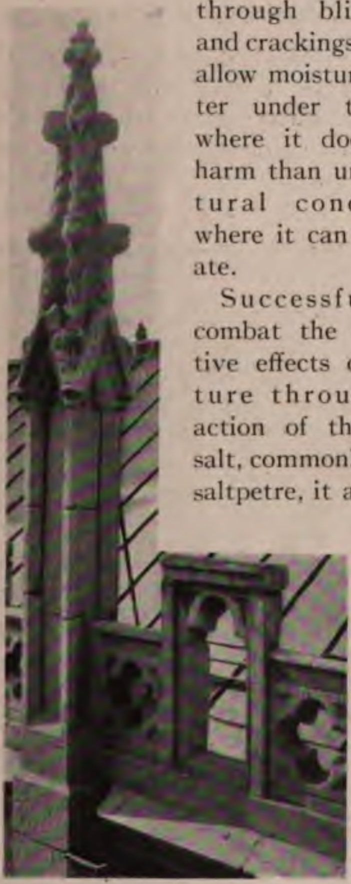
Mr Whigelt had years before satisfied himself of the inadequacy of the preservative methods in use and had set about the task of evolving a really effective and permanent cure.

Liquid coatings such as paint materials applied with brushes and drying by oxidation with a surface film used for such purposes were known to be subject to the action of the elements. The basis of these coatings is drying oils combined with resins. These materials require constant re-coating and change the natural appearance of the stone. They are also subject to destruction by weathering, and through blisterings and crackings by frost allow moisture to enter under the film where it does more harm than under natural conditions where it can evaporate.

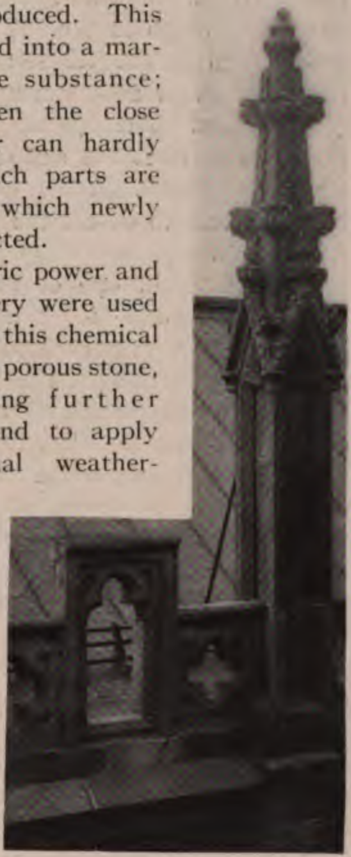
Successfully to combat the destructive effects of moisture through the action of the alkali salt, commonly called saltpetre, it appeared necessary to neutralize this action without destroying the binding agency of the mortar joints and building materials or causing a reaction of the chemicals used in or created by the neutralization process. After endless experimenting, compounds were produced of a nature of which only the astute inventor is aware.

The decayed or broken-off sections which had to be reconstructed and replaced were not formed with cement or concrete mixtures as commonly used. In order to preserve the antique appearance of the building without showing new patches, a special compound was produced. This hardened into a marble-like substance; and even the close observer can hardly tell which parts are old or which newly constructed.

Electric power and machinery were used to force this chemical into the porous stone, preventing further decay and to apply the final weather-



A Minaret Showing Severe Weathering and Decomposition



The Same Minaret after Hardening, and Weather-Coating

Acid Tank and Electric Force Pump used in the Whigelt Process

proof compound preventing the elements from beginning their destructive action again. The materials used in the Whigelt method leave a natural appearance without discoloration. The seasoning of the materials restores the surface to its original condition. In fact, even now, it is difficult to detect the restored stone work.

Grace Church, one of the finest Gothic structures in the United States, is now preserved for future generations. In short, the Whigelt-Central Station combination has assured the life of the old edifice for a term of years little hoped-for by the discoverers of the alarming malady.

An "Amphora" or Pompeian Urn, about three thousand years old, excavated some years ago and one of the four now in existence is set on the grounds north of the church. This urn, likewise, in a serious state of decay as the illustration shows, would have been entirely destroyed within a limited time but for preservation by the method described.

Northern Lights

Somewheres north of the Pole you know
Somebody runs a dynamo,
Lighting the skies in pink and red
After the bears have gone to bed.

The glow comes up when the sun goes down
Just as the lamps light up the town
Putting to blush the moon and stars
With the play of its rosy, radiant bars.

Whoever runs this dynamo
White, or black, or Esquimaux
Has us beat on this mundane sphere
Painting up the atmosphere!

He's headquarters for wave and watt
Squeezing the juice in some polar spot
Hiding the plant in the ice and snow
The busy, whizzing dynamo!

Perhaps us chaps in the engine room
When we throw a switch to break the gloom,
We steal but a bit from the dynamo
Hidden away in the ice and snow!

Don C Seitz

A Three Thousand Year Old Pompeian Urn Treated by the New Preservative

Bridging the Past

FROM the time prehistoric man felled a tree across a stream to the modern days of the exact science of the civil engineer, the art of bridge building has occupied the mind and ingenuity of man. No work is more fascinating, no results more spectacular, than this struggle with the forces of nature. A mighty stream in olden days formed an almost insurmountable barrier to commerce. It divided nation from nation, and in time of war was a bulwark of defense. But war could not for long claim the attention of men to the exclusion of all else. Commerce assumed a position of importance and with commerce came the demand for better methods of transportation. Boats could not carry men and merchandise with the facility afforded by a bridge, and so with the advance of civilization the problem of spanning streams of necessity began to be solved.

Drawn by Edna Hood Lissak

The Suspension Bridges of the Incas afford Exciting Means of Passage across the Torrential Streams of Peru

Bridge building is one of the ancient arts, though no definite record of a permanent bridge appears before 2200 B C. This was the time of Nimrod, the third ruler after Noah. The River Euphrates flowed most inconveniently through the City of Babylon, so the decree went forth that a structure be devised to cross the stream. The result was an arched bridge of brick, 660

Drawn from an old print by Edna Hood Lissak

One of the Earliest Bridges Built by the Fratres Pontifices was this Bridge of St Bénézet at Avignon, France

feet long and thirty feet wide. Some thousand years later, Nitocris, then Queen of the Babylonians, seeking something new to occupy her mind, decided that another bridge was needed to handle the vast crowds which thronged to that city of mystery. Her engineers were consulted and, marvel of marvels, a wooden bridge resting on stone piers made its appearance, the first of its kind in the history of the world. The stones in the piers were fastened together with huge chains of iron with melted lead poured into the crevices. While the problem to the eyes of the modern engineer would appear trivial, it was a vast undertaking in those days. So marvelous in fact that the course of the entire river was changed in order that the engineers might view the foundations on which the arches were to rest. Herodotus records that the bridge was of equal magnificence with the rest of the buildings of Babylon.

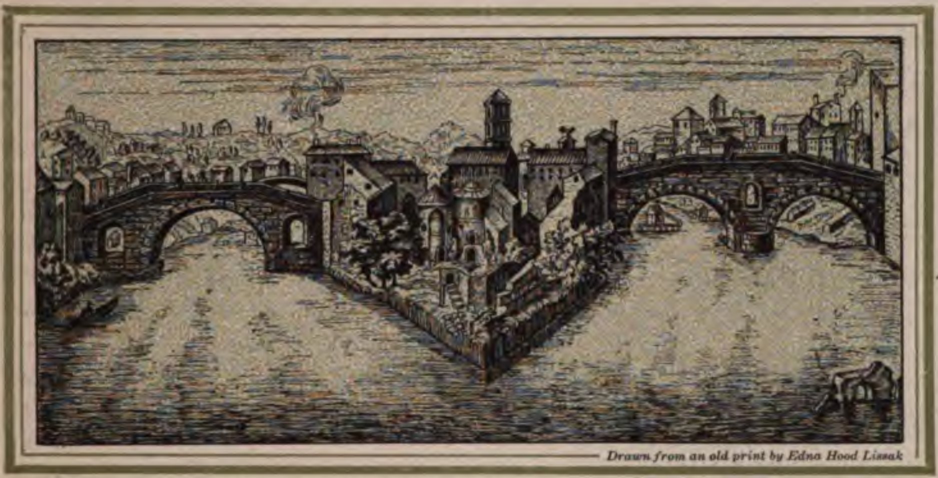
Aside from these, no bridges of importance seem to have been built in Asia Minor, with one possible exception. The fabled Colossus of Rhodes is thought by some historians to have been a bridge, but as no remains have ever been found, there is only theory to support the claim.

The science as a whole, however, did not thrive in the early days. A bridge was usually constructed for purposes of war, and accordingly, permanent means for crossing a stream were far from popular. It was all very

Drawn from an old print by Edna Hood Lissak

In 1812 Lord Wellington pursued the French Across Trajan's Bridge at Alcantara, Spain, building a Rope Structure over the Arch destroyed by the Retreating Enemy

well when it was your army that was crossing the bridge or friendly traders, but an invading army had all the same advantages. There was also no great necessity for bridges in Asia Minor, where there are few large rivers which are not fordable. In Egypt the Nile is the one and only river of importance, and even those marvelous engineers of the pyramids must have faltered at such an undertaking as bridging its waters. Furthermore, the nature of the soil prevented the possibility of a firm foundation.



Drawn from an old print by Edna Hood Lissak

Built in 62 B C, the Bridge of Fabricius and Cestius at Rome is the Oldest Still in Existence

It was not until the Roman Empire, with its vast organization, demanded better means of transit from one section of the country to the other that bridge building became of prime importance. Thoroughness was the motto of the Empire makers, and with all roads leading to Rome, bridges were necessary to finish the network. No invading armies were to be feared in the centre of the civilized world and the River Tiber was soon crossed by numerous structures, many of which, survivors of centuries of floods, earthquakes and wars, are in use today. The Romans built for the future and with the cost of labor removed through the employment of thousands of slaves captured in the apparently endless succession of successful wars, no task was too vast to attempt. A sidelight on how canny were the city fathers in assigning work to the builders was the custom of requiring that the latter make repairs on the bridges and keep them in good condition for a period of forty years, final payments being withheld till after this time. Needless to say, the business of bridge building was handed down from father to son.

The Bridge of Fabricius and Cestius, said to be the oldest bridge in existence, was built by the Romans across the Tiber and is divided into two parts by the Island of Æsculapius. It is now known as the "Ponte dei Quattro Capi." The Bridge of Fabricius is practically intact, and was completed in 62 B C, although its sister structure, built some sixteen years later, only retains a part of its original masonry.

In 55 B C, Cæsar built his famous wooden bridge across the Rhine. This task, accomplished in ten days in the face of an enemy, is one of the greatest feats of its kind in history. A detailed description is given in the writings of the Emperor.

The beautiful bridge at Alcantara, Spain, is believed to have been built by Trajan, and is known by that Emperor's name. It dates back to 98 A D, and except for one arch is in almost perfect condition.

Bridging Streams in the Andes

The Incas, the most famous of the ancient inhabitants of the Americas, contrived what might be called the ancestor of the modern suspension bridge. Necessity was then as now the mother of invention, and in a timberless part of the country with roaring torrents and unfordable streams, it was impossible to build the substantial structures that appeared in the Old World. "Rope" bridges made of cables of braided withes were stretched from bank to bank and anchored to piers of stone. Three or four cables formed the principal support of the bridge, over which small sticks or sometimes only sticks of cane or bamboo were laid transversely and fastened to the cables by vines, cords, or thongs of rawhide. Two smaller cables were hung on either side as hand rails. The wonderful bridge of the Incas in Peru, the greatest example of this type, is 148 feet from fastening to fastening. Travelers are forced to time their journey so as to cross the bridge in the early morning before the winds set in, as most of the day the terrific gusts in the chasm rock the structure like a gigantic hammock, and crossing is next to impossible.

With the fall of Rome and the advent of the so-called Dark Ages, the art of bridge building received as severe a setback as the other arts and sciences. It was not till the twelfth century that it emerged from the mælstrom of barbarity, and then the guiding spirit to aid it in its growth was religion. "Fratres Pontifices"—"The Brothers of the Bridge," as they were called, a religious order of Benedictine Monks, erected bridges in Northern France in connection with the houses established at river crossings for the safety of travelers. The land was infested with bandits and bridge building became a sacred duty to aid the wanderers. The Bridge of St Bénézet, crossing the Rhine at Avignon, has had an adventurous history, having supposedly been built by St Bénézet, the founder of the Brothers of the Bridge.

From this time on bridges began to appear across most of the rivers in thickly inhabited sections all over Europe. Before long small bridges were built in the colonies of America, and with the advance in the science of engineering, progress was made in leaps and bounds. Wood was replaced by iron, as with the invention of the steam engine stronger materials were necessary to support the huge weight of the locomotive and cars. Steel was used, and at last the finished product of forty centuries of the art is seen in the bridges, great and small, spanning the rivers and streams of Greater New York.

Apartment HouseKeeping

FOR many years home life on the island of Manhattan has suffered from geographical restriction. The general tendency has been to try to fit plans of living suitable for other situations into an environment widely and inevitably different. Until recently, little direct effort has been made to work out a system of household economics based on the restrictions of city life.

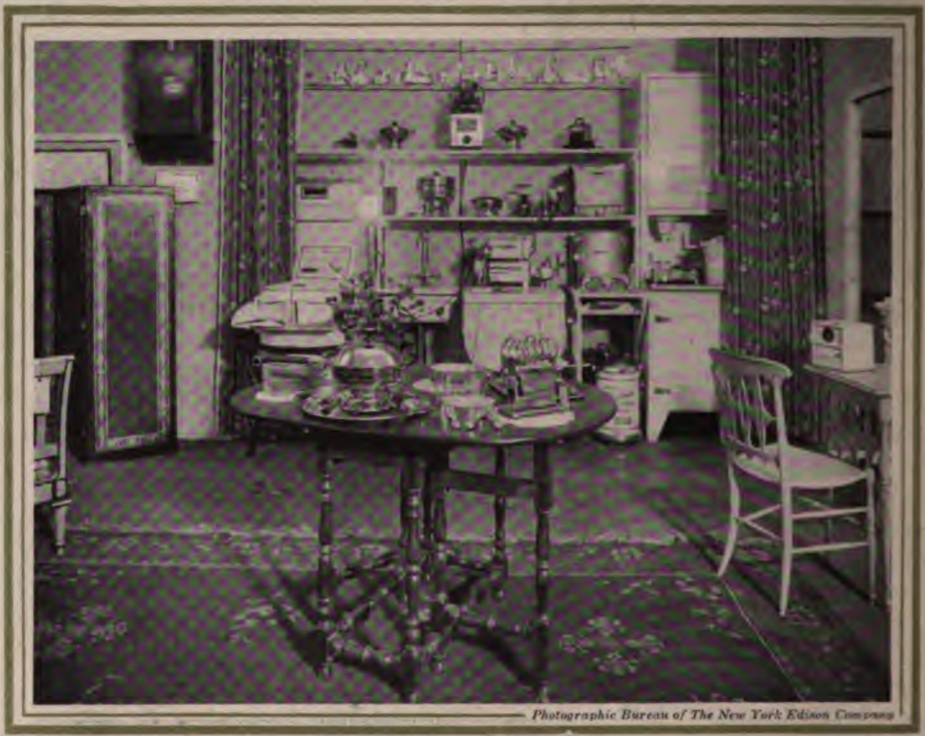
The first step, consciously or unconsciously to evolve itself was the "flat" or apartment, which began to make its appearance about a generation ago. The drawbacks to this mode of existence we of today know only too well. What we are apt to forget is that the preceding method also had its objections. We picture mentally a family of moderate means enjoying the luxury of a whole house, and contrast this with a present day household, storing itself, goods and chattels, in seven rooms. But the truth is that the average family of a generation ago did not enjoy the uninterrupted privacy of a whole house. Literature of that period shows only too often the family struggling along with insufficient means, sometimes letting the house fall into decay for want of renewals and repairs, and going servantless where only ample service could produce comfort, or, wearying of the hopeless burden, surrendering the boasted "privacy of the home" and "taking in boarders."

While the substitution of living on one floor for living on many was a

Photographic Bureau of The New York Edison Company

Large Living-rooms with their Complement of Electric Appliances compensate for the Cramped Quarters of the Kitchen in a Small Apartment

first and necessary step in the evolution of new household economics for New Yorkers, the invention of the apartment was by no means the entire solution. Today it is conceded that the problem is fully to adapt the apartment for the needs and comfort of its occupants, along lines compatible with city conditions. In this transformation, electricity has so far played an important part, and is destined to still greater achievement. Already, one can hear of "all electric" apartment houses, projected, not on paper by enterprising theorists, but in steel and stone by investors who expect to find such a venture profitable.



Photographic Bureau of The New York Edison Company

Screened from the Rest of the Room, the Bachelor's Kitchenette, occupying a space nine feet by twenty-eight inches is Quite Out of Evidence Until Need Arises

The basic principle of the new city household economics seems roughly to be this: to retain in the home such activities as space and circumstances permit, and to reduce as much as possible the labor requirements of these tasks. This may be denounced as wasteful and shiftless by people of other communities, but a frank and unprejudiced study of the situation will show that many small-town economies become luxuries in New York, while New York home economics would become poor management in other communities.

For the purpose of this article, discussion is limited to the average establishment, either the smallest

Photographic Bureau of The New York Edison Company

The Tea Wagon and Its Table Cookery Appliances Save the Hostess Many Steps

unit, the servantless one, or the next larger in size, where one maid is kept. In the first place, why have these two arrangements become typical? It seems to be a matter of space more than of wages, even though the latter are admittedly and alarmingly high.

Earlier attempts at space-saving in the apartment, relegated the family servant to a kind of cell, small, dark and unhealthy; however, with confinement voluntary, the inmate refused to be detained long. The next step was more revolutionary. Servants' quarters were omitted altogether, the place of the "living-out girl" being taken either by the day-worker, or a still later development, by electricity.

At the same time, the kitchen has also undergone transformation. While not threatened with total extinction, this alleged pillar of the home has suffered notable diminution, in most places giving way to the kitchenette. Even where the older title has been retained, and where somewhat more generous territory is allotted, the roominess of our grandmother's ample home factory has departed. To compensate for its loss, the flat-dweller must content himself either with decreased rent, or with a much larger living-room than was customary in the apartment of ten or fifteen years ago.

The establishment where help is to be maintained has also been designed afresh. It is frankly on a more expensive scale, though space here too, is minutely considered, or rather more skillfully utilized than in similar buildings dating back into the nineties. Large living-rooms are the rule, balanced by small bed-rooms, since

Photographic Bureau of The New York Edison Company

The Motor and Drink Mixer find Many Applications in the Kitchen, while the Grill is Frequently Used at the Table

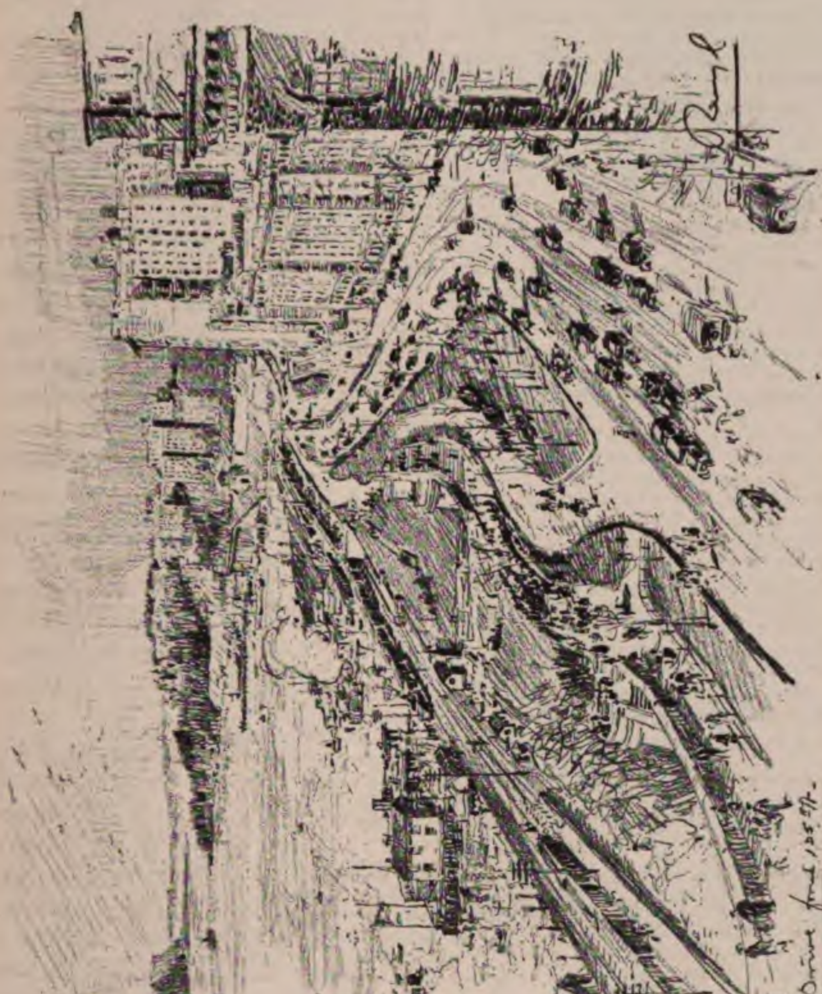
these are used only for sleeping. In the kitchen, compactness reigns, comfort being supplied by an adequate mechanical equipment. Compact also is the maid's room but now glorified with elaborate toilet facilities, for the builder of today knows that the domestic servant must receive many considerations.

Electric Equipment for Apartment Housekeeping

The electrical outfit necessary for these two styles of living varies to suit the circumstances. In the servantless flat, it is assumed that all heavy laundry work is sent out and no apparatus of this kind is generally scheduled, although machines can now be obtained, designed for a family of two. An electric flat-iron for fine work and for pressing will be found in most households of this type. Emphasis, however, is laid rather on the devices that will enable the lady-of-the-house to clean and cook least laboriously. For this purpose, there is the vacuum cleaner and an assortment of cooking devices. A suitable group made up from the smaller units will contain the lamp-socket range, the table range, single and double disc stoves, or grill with ovenette attachment. Add to this a small plate warmer, a drink-mixer for general cooking purposes, and one has a thoroughly practical equipment. For convenience and comfort, selection can also be made from such articles as the chafing-dish, tea-kettle, percolator and toaster, while a small dish-washing machine, or a fan for dish-drying means much in labor saving. Where considerable sewing is contemplated, a machine, operated by an electric motor attachment, should also be included. This not only saves time but conserves energy.

For the apartment where a servant is employed, a different system of selection prevails. Here the idea is to make the mechanical equipment supplement her labors so that her tasks can be performed most thoroughly and with the least effort. For such an establishment, laundry appliances are advised, for since the maid's presence represents both wages and higher rent, good management demands the fullest use of her services. Thus a vacuum cleaner is considered a necessity, both to hasten and to perfect the endless cleaning processes. Power appliances for the kitchen are likewise recommended, a much more elaborate menu being assumed. The latest form of this is the so-called "power unit," which operates by motor all the usual grinding and stirring devices formerly turned by hand, such as the coffee mill, grinder and freezer. To remove all kitchen odors, an exhaust fan and an ozonator are a final touch of luxury.

On the other hand, cooking apparatus is limited to those appliances that a hostess might wish to use at the table or for tea service, the bulk of the food being prepared by the maid. Complete equipment for such an apartment would be represented by the following: electric fireless cooker, warming oven, power unit, dish-washer, refrigerator, vacuum cleaner, washing-machine, iron and mangle for "behind the scenes" while to the dining-room are allotted percolator, tea-kettle, egg-boiler, toaster and waffle-iron.


Riverside Drive from 125 St.

The Apartment Houses of Riverside Drive, and the Broad Expanse of River Stretching Northward

Manufacturers and Agents (Continued)

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Low Voltage Direct Current Bell Ringers

U S E M Co—301 West 37th St

Motors

General Uses

Allis Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
Russell & Co—56 W 45th St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St
Westinghouse Elec & Mfg Co—165 **Broadway**

Used Motors

Archer & Baldwin—114-118 **Liberty St**
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 **Canal St**
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—**Orange N J** 114 Liberty St N Y C
Ensign Elec Calculating **Machine—280 B'way**
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—**Wool**worth Building
"The Millionaire" Elec Cal Mach—**1 Mad Ave**

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & **Machine Co**—503 Morris **Building, Philadelphia Pa**
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West **Broadway**
International Steam Pump Co—115 **Broadway**
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 **Broadway**
Platt Iron Works The—50 Church **St**
Quimby William E Inc—548 **West 23d St**
Rider Ericsson Engine Co—20 **Murray St**
Rumsey Pump & Mach Co—75 **Warren St**
Twinvolute Pump and Mfg Co—30 **Church St**

Refrigeration

Automatic Refrigerating Co—50 **East 42d St**
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Mad Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—649 W 43d St
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—**Broadway and Herald Sq**
National Elec Sign Co—**61 Hudson St Jersey** City N J
Norden Electric Sign Co Inc—**311 W 40th St**
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—**415 W 48th St**
Prismlyte Co The—8 St Felix St **Brooklyn**
Snow & Co—531 W 46th St
Rice Geo H Co Inc—**481-87 Sterling Pl Bklyn**
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—**240 W 50th St**
Wertheimer Sign Co—**558 W 36th St**

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—511 W 42d St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl, 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 B'way
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—35 Vestry St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Ave
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James—119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden) 119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cataract—46 E 41st St
Home Devices Corp (Modern)—Bush Term Bklyn
Hurley Machine Co—147-157 W 42nd St
Kandem Electric Co Inc—49 E 21st St
National Sewing Machine Co—290 Broadway
Sibley-Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Westinghouse Elec & Mfg Co—165 Broadway
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

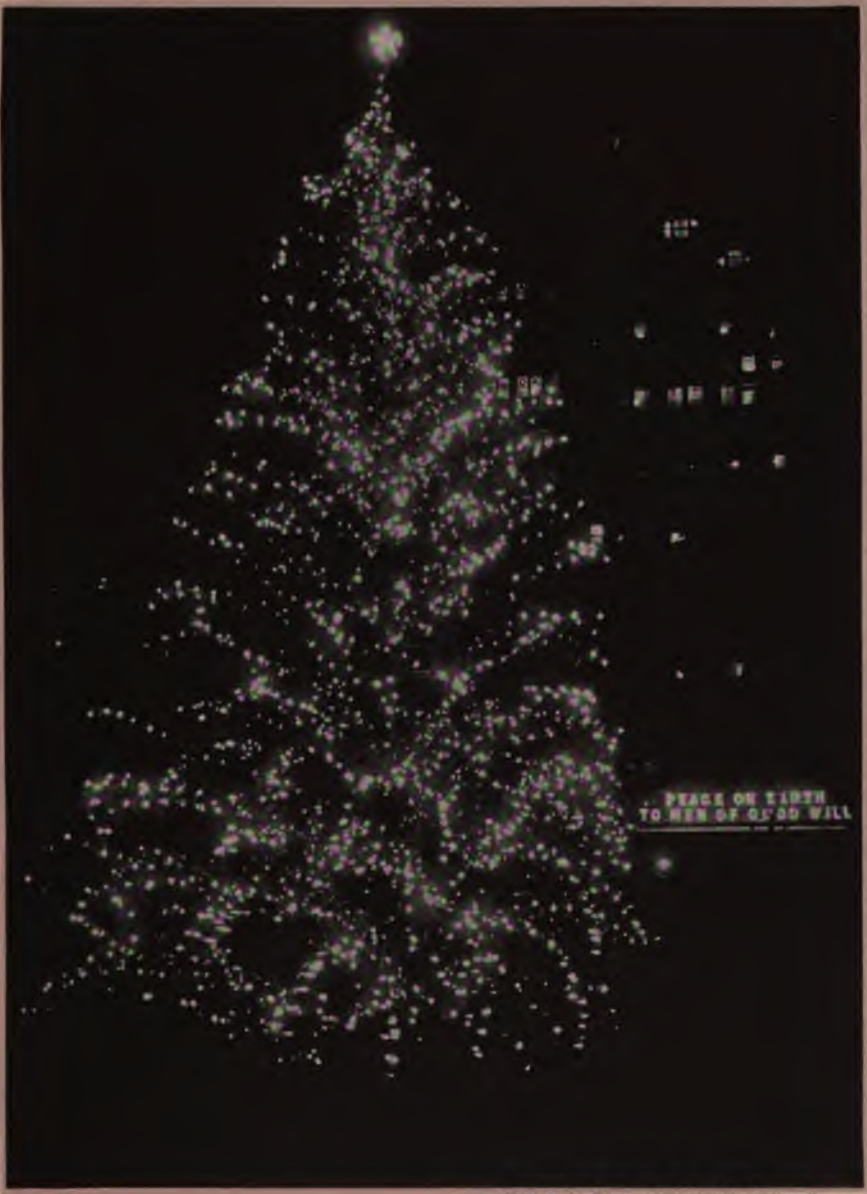
West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Construction Company
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Fifth Ave 75 —H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Elec Co
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Electric Contracting Company
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Elec Construction Co
West 31st St 109—Jandous Electric Equipment Company Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—New York Electric Installation Company
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 56—Russell & Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Manufacturing Company

East of Broadway and Fifth Avenue

Beekman St 74—Jordan Bros Const Co
Bible House 78—Thos C Miller

The Tree of Light



Photographic Bureau of The New York Edison Company

This Magnificent Tree, the Fifth to be Erected in Madison Square Park was the Centre of Yuletide Celebration for Cosmopolitan New York and the Point of Vantage a Week Later from which the City Welcomed the Coming of 1917. Gotham's "Tree of Light" Measured Sixty-four Feet from its Base to the Glowing Star at its Top and is said to have been Seventy-five Years Old

Supplement to The Edison Monthly, January, 1917

Department Stores which Sell Electric Appliances

Adams-Flanigan Co—Westchester & Third Ave Bronx Basement
Barnett Bros—Columbus Ave & 74th St Basement
*Bloomingdale Bros—59th St & Third Ave Basement
John Daniell Sons—759 Broadway Basement
*Gimbel Bros—6th Ave & 33d St Fifth Floor
*J B Greenhut & Co—6th Ave & 18th St Basement
H C F Koch & Co—132 W 125th St Basement
Lewis & Conger—Sixth Ave & 45th St First Floor
Liggett-Riker-Hegeman Drug Stores
Lord & Taylor—5th Ave & 38th St Fifth Floor
*James McCreery—5 W 34th St Sixth Floor
*R H Macy & Co—Broadway & 35th St Basement
Rothenberg & Co—34 W 14th St Basement
Stern Bros—41 W 42d St Fourth Floor
*John Wanamaker—Broadway & 10th St Seventh Floor

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*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 West 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Brooklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Clarence L Smith Co Agents) —544 W 30th St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey Street Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent) —236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—Mt Vernon N Y (C)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Lincoln Electric Co—Cleveland O (Read-Dresser Eng Co—149 Broadway Agents)
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Edison Thomas A Inc—141 Lakeside Ave Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Manufacturing Co—165 Broadway

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—2 West End Ave and 64th St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42 St
Phila Storage Battery Co—American Building Broadway and 58th St
Storage Battery Supply Co—239 East 27th St

Manufacturers and Agents (Continued)

Mechanical and Battery Parts (Concluded)

Walker Vehicle Co—531 W 46th St
Willard Storage Bat Co The—228-30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric—Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf) —303-305 Fifth Avenue
Hospital Supply Co The—53-55 Fifth Avenue
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Ave
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Broadway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—35 Vestry St
Neel-Armstrong Co—29 W 34th St
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 Eighth Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—Fifth Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 E 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 W 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 B'way
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 W Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
National Elevator Co—62-64 W 45th St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
American Blower Co—141 Broadway
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St
Curtis Pneumatic Machinery Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—649 W 43d St
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Gerdes Theo R N—123 Liberty St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—649 W 43rd St
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
Kandem Electric Co Inc—49 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 B'way

Globes—Reflectors

Dealing William—1 Hudson St
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42d St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—649 W 43d St
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialites Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio
Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Low Voltage Direct Current Bell Ringers

U S E M Co—301 West 37th St

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St
Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Spring 9890
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
124 W 42d St	Bryant 5262
151 East 86th St	Lenox 7780
27 East 125th St	Harlem 4020
362 East 149th St	Melrose 9900

All showrooms open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts, west of the Bowery and south of Catherine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street, east of and including the Bowery, and north of and including Catherine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

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N F Brady, President
Joseph Williams, Treasurer
Lewis B Gawtry, Secretary

The general argument in favor of ventilation for profit follows the principles laid down in defending the economic value of several forms of "welfare work," so-called. There was a time when a manufacturer might with profit to himself work his employees to the poor-house or the grave. Of course, society paid the ultimate bill, but this was made up so slowly that payment was not generally demanded of the generation that incurred the indebtedness.

◆

Under present conditions and especially under city business conditions society presents its bill promptly and insistently. If trade deprives a family of its breadwinner, through accident, overstrain or improper working conditions, the community pays. The city must provide hospitals, sanitariums, orphan asylums and such like substitutes for paternal support—all of which is accurately recorded in the taxes. Then too, there are the Compensation laws.

Where illness and minor injury are concerned, it is obvious that in the case of salaried employees it is to the employer's advantage to have them not only lose as few days as possible, but also to keep them in the best possible working form. Where factory hands on a per diem or piece basis are concerned, the fact is equally true, but not as self-evident. The business represents a definite investment in plant and machinery; there are certain expenses such as interest, depreciation, insurance and office and selling charges, which go on whether the machines are running or not. The prosperity of the business depends upon having the given equipment turn out so much material. Anything that tends to disturb the daily output is a factor of loss.

◆

Furthermore, the manufacturer should not forget that day and piece workers of all kinds estimate with great accuracy the amount of time that they lose from illness and related causes. Logically enough, these medical and insurance costs are reflected on the wage scale of the given trade. It is a well-known fact that dangerous trades of skill, or those involving the early "working-out" of the craftsmen are among the highest paid.

But all these, it is argued on the other side, are general production costs, to be met in the selling price and paid by the ultimate consumer. To take this stand, however, is to overlook the element of competition; if John Jones discovers that he can cut down the amount of time lost from illness, or increase the product of his plant by providing especially favorable working conditions, John Jones will be able to undersell the Smith-Brown Company and get the business.

Such are the arguments in favor of "welfare" effort of various kinds, especially those where it is not easy to prove a definite connection between the measures adopted (such as cost of free luncheons, rest rooms, recreation facilities, etc.) and the improved efficiencies obtained after this adoption. On the contrary, ventilation is not an indefinite matter; while much still remains to be ascertained, enough has already been learned to prove that pure air is a profitable investment.

◆

The recent reduction in rates for electric service by Central Station Companies in New York, coming at a time when other commodities are steadily advancing in price, serves to recall once more the predictions of several years ago, made in the days when electricity as an illuminant was just coming into its own—"that while other necessities might advance in cost, electric light would inevitably grow cheaper."

How well that prophecy is being fulfilled is seen in a study of the cost of a given degree of illumination over an extended period of time. From 1884 to 1890 the cost of 10,000 candle-power hours of electric service was $7.50. For the next twelve years the cost was $6.25. Then a series of reductions brought the cost in 1905 to $3.12½. It remained at this figure for two and one-half years, when a still greater lowering brought the cost to $1.62. Gradual reductions in the cost of lamps lowered this to $1.29 in May, 1914. In September of the past year, the cost was only 59 cents, while today, an hour's illumination of 10,000 candle-power brilliancy using the large size nitrogen gas filled lamps costs only 54 cents.

While this reduction is, in large measure, due to the development in lamp manufacture resulting in a decreased current consumption for the amount of light obtained, it has been through continual rate reductions that the remarkable comparative figure is possible.

◆

In the early eighties, with a twenty-cent rate, lamps consumed four watts per candle-power. In 1902-1905 lamps had been improved to a degree where only 3.1 watts were required, the rate being 15 cents per kilowatt hour. In 1908 the tungsten filament lamp with an efficiency of 1.25 watts per candle-power was introduced. At that time the electric light rate was ten cents per kilowatt hour. In May 1915, almost coincident with the introduction of the large nitrogen gas-filled incandescent lamp, with an efficiency of .65 watts per candle, the rate was reduced by two cents which combined with the use of the new lamp resulted in a cost of only 59 cents per 10,000 candle-power hours. The present reduction of a half cent—effective January 1st, with a further reduction promised for the first of July—comes at a time when there is no especially remarkable development in lamp efficiency.

Fulfilling as it does the prophecy of of the past this steady reduction in the cost of electric light might well be interpreted as a forecast in itself, for surely it must be read as an indication of still further lowerings of the cost of this universal commodity.

Photographic Bureau of The New York Edison Company

What Nature with every Sunset Light Accomplishes. Rising against the Brilliance of Afterglow, the Great Statue Commands with an Authority of Contrast in Keeping with so Superb a Work and Subject. Shortly after Sundown on this Particular Evening the new Electric Illumination was Flashed On

Ventilation and Efficiency

SCIENTIFIC interest in the effects of good and poor ventilation first attained proportions of importance in the educational field in connection with the construction and operation of school buildings. Here were conditions that particularly interested the average citizen, for it was realized by many that a good and sufficient air supply was without doubt closely related to the health and progress of school children. It was also recognized that ordinary window ventilation would be inadequate where large numbers of human beings were assembled in a comparatively small amount of space, for long hours, and through a wide range of out-door temperatures.

Tests have been made in Indiana, Minnesota, Massachusetts and here in New York, the most extensive experiments on the subject being carried out at the College of the City of New York, under the direction of the New York State Commission on Ventilation. (In this connection it may be mentioned that Chicago has also a similar committee.) In Indiana the school authorities reported a 25 per cent increase in the working capacity of the children where correct air, light and heating facilities were furnished. The students in class-rooms so equipped did in three years the course of study that took pupils in unimproved buildings four years to complete. During the experiments at the New York City College it was ascertained that students working in a room at 68 degrees, and maintained at a proportionately correct humidity, did 15 per cent more than when the temperature reached 75 degrees. At 86 degrees the amount accomplished fell off 35 per cent. Paralleling this is the report of the Smith Infirmary in Staten Island, that in wards systematically ventilated cures were effected in an average of ten days, while in wards supplied only with "window" air, the average rate of cure was sixteen days.

Commercial and Industrial Tests

But tests have not been confined to educational and medical matters. There are many shops and offices where ventilation has been tried and found profitable. Among the earliest of these efforts was that of the Germania Life Insurance Company which several years ago adopted a thorough system of ventilation for an office in which eighty men were employed, and where previous to the installation the rate of absence had been ten per cent. After adequate air supply had been furnished, the absence due to minor illness was almost entirely eliminated. The Manhattan Trust Company has found that with proper ventilation its work can be done by 4 per cent fewer employees than previously were needed. Another New York instance is that of a printing establishment where air conditions were so noticeably bad that the State Department of Labor ordered the use of exhaust fans and blowers. The firm resisted the order for two years and then finally made the changes under strong protest. However, after the new machinery had been in operation for six months the proprietor voluntarily reported to the Labor Department that the results were highly and unexpectedly satisfactory. He said they were more than paying for the ventilation in the reduction of illness and in the decreased number of errors in type-setting.

Other cities, too, have contributed their experience. When the United States Pension Bureau at Washington was housed in old, unventilated quarters, the average days lost per year in sickness among the employees was 18,736. In newer, ventilated offices and with a larger staff, the number of days absent was reduced to 10,114. The Townsend, Grace Company of Baltimore erected a straw-hat factory, making no provision for artificial ventilation. For the two succeeding winters, the sick rate was as high as 27.5 per cent; following the introduction of ventilating fans, the sickness rate dropped to 7 per cent, and the factory estimates that the equipment paid for itself in one year. Strouse Brothers, another Baltimore firm, reports the sick rate in their clothing factory practically cut in half by furnishing an adequate air supply.

An American Blower used to Ventilate the Kitchen in one of the Mercantile Lunch Rooms

Another interesting case is that of the Cambridge, Massachusetts exchange of the Telephone Company. The operating room, employing between fifty and sixty young women, was originally aired only from the windows, and during the winter months this natural air supply was found to be extremely unsatisfactory, its inadequacy being reflected by frequent illness among the operators. For January, February and March of 1906 and 1907 the absence rate was respectively 4.9 per cent

The Ventilating System of the Beech-Nut Packing Company was Installed by the Buffalo Forge Company and 4.5 per cent. By the following winter a simple blower arrangement had been arranged and the absence rate fell to 1.9 per cent; the equipment cost $75 and the saving in extra wages for the three months was $195.

At this point, the reader may well ask, what is the exact function of air in the human economy, that it should thus affect the activities of mankind? To enter into this is to approach some of the most complicated problems of physiological chemistry, questions on which the authorities themselves are by no means agreed in every particular. However, the accepted working theory is that air serves to remove surplus bodily heat. It appears that human beings ordinarily produce as much heat per hour as two burning candles, and when engaged in active physical effort, more than this. Should the air facilities be such that this waste product is not carried off, the system becomes clogged, its unbalanced condition being reflected in depletion of energy. Thus correct air conditions imply air within a certain range of temperature, having a relative humidity and being in motion. Oxygen and carbon dioxide content may serve to indicate whether the desired factors are present, but are not essential in themselves in causing or removing discomfort.

Thus, commercially, the problem of ventilation is to furnish an air supply to meet the given conditions of occupation, in cases where "natural" ventilation from windows is not sufficient. There can then be no fixed formula for adequate air supply; it must fill the requirements of every definite case, involving the amount of air space available per worker, type of activity, outside climatic conditions, and so forth. The standard means employed is some system of exhaust and blowers, electrically operated.

Certain separate classes of ventilation straightway suggest themselves. Most striking are trades involving dust, grit, steam fumes and offensive odors; these all call for the ventilating engineer, and must be solved according to the circumstances. Another large class is that of assembly halls. The varying factors here are the density of seating, the opportunities for window ventilation both before and after each usage of the auditorium and so forth. Where the owner has a financial interest in making his quarters attractive, the value of adequate

Combining the Heating System with the Ventilating System. The Sturtevant Installation in the Shop of the New York Shipbuilding Company

ventilation is usually appreciated. Equally specialized cases for study are schools and hospitals, instances which have generally received careful attention.

This thirty-inch Fan, Installed by the Ilg Electric Ventilating Company, Provides Adequate Ventilation for a Chemical Laboratory

A situation characteristic of New York is the use of artificial air supply to make available portions of buildings that would otherwise be largely wasted. In New York space means money, and most businesses cannot afford to let their basements and sub-basements go for storage only. A conspicuous example of this is the Gimbel department store, where it has been found possible by means of ventilation, to utilize even the sub-basement for selling purposes.

The field most likely to be overlooked is that of general office ventilation. Where employees are crowded together sufficiently to make the need for additional air supply felt markedly, this defect is more apt to be remedied. But the usual result is a war-of-the-windows, waging most of the year round, its fiercest conflicts occurring during the winter months, when the sturdy, feeling acute need for fresh air, battle to have those windows open, and the more feeble, suffering from cold, are equally determined to have them shut.

Recently a large and comparatively new office building, housing thousands of workers, was examined as to its air conditions. Of 118 offices investigated, 35 per cent had no artificial ventilation, and in only 61 per cent of the rooms had any attempt been made in this direction. Throughout the building, 74 per cent of the offices were either not ventilated, or were ventilated insufficiently. The same structure boasted an auditorium which when in use, gave, on three occasions, a thermometer reading of 87 degrees.

Thus it can be seen that the specialized trade and general business conditions of New York offer a rich territory for ventilation, an endeavor where profit and human comfort are happily both represented.

Whatever ailed, "the light that failed,"
So fitful and so hectic,
I'll wager now,
That anyhow
It wasn't an electric.

Walter G Doty

St Ignatius' Anniversary

ON a Sunday more than sixty years ago, in a dingy little hall in Yorkville, a Catholic Father first said Mass for a handful of worshippers. Such was the humble beginning of the great institution that today is the Church of St Ignatius Loyola, which last month celebrated with pomp and pageantry the golden jubilee of the coming of the Jesuit Fathers to the parish.

Yorkville in 1854 was a small straggling community with few Catholics. The old Post Road, now Third Avenue, was its main street. Here horse cars jogged up and down, and, until the opening of the impromptu chapel in the hall, Catholic worshippers had had to take a weary trip either to the church in Harlem or to the parish downtown.

They wanted a church of their own. It was Father Quarter, the second rector sent them by Archbishop John Hughes, who got for his people their desire. He must have been a vigorous big man—full of enthusiasm and the power to get things done. One can imagine the bluff way he hustled about getting subscriptions for a church, never losing sight of the big purpose no matter how discouraging the outlook must often have been.

In 1854 he saw his dream a thing of

Photographic Bureau of The New York Edison Company

Electrical Decorations, which included the Flag, the Outline of the Building, the Cardinal's Seal and that of the United States, Added to the Impressiveness of the Evening Services actual stone and brick, dedicated as the Church of St Lawrence O'Toole. Twelve years later the Jesuits took charge of the parish, celebrating their first public mass in 1866. The Rev. Samuel Mulledy, who was head of the Church after Father Quarter, had once been a Jesuit, but for some reason he severed his ties with the Order. Just before his death he was readmitted and it was on his solicitation that St Lawrence's came under Jesuit control. For three years the College of St Francis was in charge, but then came Father Moylan to be the first independent pastor and Superior of the residence.

The golden jubilee held from Sunday, November 26th, to the following Sunday was a wonderful tribute to the work done by the early Fathers. Each and every branch of the parish contributed to the program which made the event memorable. Cardinal Farley presided over the opening ceremony and a Pontifical High Mass was celebrated by His Excellency John Bonzano, Apostolic Delegate to Washington. The long procession of gorgeously robed priests, acolytes and other participants made a marvelous pageant of color as it passed into the sanctuary.

Two receptions were held—one by the men of the parish in honor of the Cardinal, the Apostolic Delegate and the clergy of the church, and the other an "Old Home" reception for parishioners. Then came the childrens' share in the celebration. The Parish School and the Kindergarten produced nothing less than an oper-

Photographic Bureau of The New York Edison Company

Founded more than Sixty Years Ago, the Church of St Ignatius Loyola Celebrated last month the Fiftieth Anniversary of the Coming to the Parish of the Jesuit Fathers

The Forerunner of the Present Church was Dedicated as the Church of St Lawrence O'Toole

lights a reproduction of the Cardinal's seal, while high above it was a colored United States seal. The Regis High School, too, was illuminated with strings of lights, and over its door shone the seal of the Jesuit Society.

The educational work of the Parish, of which the Regis High School is one of the finest instances, goes back almost as far as the religious activities. A parish school and an Academy for girls were early established under the care of the Sisters of Charity. Loyola School, an academy for boys, was opened in 1900. In 1908 a splendid new Parochial School building was dedicated. Since then the Regis High School for Catholic Boys and the St Ignatius Day Nursery have been started, while at the celebration held last month plans were discussed for the extension of the educational work of the parish.

This present church building was begun in 1885, and not finished until 1898 when it was dedicated to St Ignatius Loyola, founder of the Jesuit order, who was admitted by Rome as the Co-titular Patron with St Lawrence O'Toole. In its interior the church was still incomplete, but every year has seen some adornment added until today it is one of the most beautiful in the city.

etta in three acts and a morality play, "A Little Pilgrim's Progress," besides the offerings of several small stars who sang or recited.

The social side of the celebration ended with a Promenade Concert for all the church societies of both men and women. Of this music Mr Charles A Hauschel, musical director of the church had charge. A solemn High Mass of Thanksgiving was held on Sunday, December third, which brought the jubilee to a close. At this the Reverend J Havens Richards, who is in charge of St Ignatius, preached.

All the church buildings were outlined during the week with many hundreds of electric lights and flags so that the jubilee spirit was felt day and night. Over the main door of the church blazed out in colored

Over Difficulties

TO be assured of the ability of motor-driven vehicles to travel territory where no signs of roadways are evident, where rocks are piled about and where shifting sand, gullies, loose timber and whatnot present formidable barriers, one need not visit the Mexican Border nor yet the battle-scarred territory of Belgium and upper France. Indeed one need only follow the daily journeying about of a certain group of electrically operated tractors used in Boston to haul contractors' material to learn a great deal about this phase of vehicle operation.

Photos by courtesy Smith-Eldridge Company

The Couple Gear Tractor Never Balks at Rough Going

One of the difficulties of the lumber business, and about the most telling, from the point of view of wear and tear on the vehicle, is the necessity of delivering building material to the scene of operations. As a rule the vicinity of a building under erection is well cluttered with dirt piles, timber, bricks, mortar boxes and the like. Even in the heart of the city where street cleaning and traffic rules make necessary a certain amount of tidiness, these conditions exist to a large degree. But in the suburbs and the country districts, where houses and barns are built out in the fields, where excavations are dug haphazardly and dirt piles are stacked up anywhere, where building material is dropped wherever the spirit moves the driver to leave it, and where there appears to be little system about anything, the vicinity of a building operation resembles in no small degree battle-scarred portions of Europe.

And it is through this chaos, through broken ground and over dirt piles, that the lumber must be carted. This is the chief reason why, in the old days, lumber yard horses were short-lived creatures that soon became knee-sprung, spavined and, in their declining years, more or less out of joint. And this, too, is the reason for the introduction of the electric tractor, the modern power-driven lumber horse, susceptible to none of the ill effects from rough and hard going.

Two lumber firms in Boston have adopted this form of motive power and as a result of a year or more of experience, the officials are quite convinced that they made a wise choice from every angle of consideration. First of all the tractors, which are of the couple gear type, can travel almost anywhere, hauling loads of tremendous weight and bulk, over ploughed fields and through corn stubbles, in fact, over any ground where traction is even remotely possible. Moreover, the size of the load carried or rather hauled by these big, powerful machines recommends them above any other form of vehicle. In truth tractors of the four-wheel type have been known to haul ten tons of material, which in lumber represents a veritable mountain of timber.

Facility in loading is still another point in favor of the electric tractor. During the night any number of trailers left in position about the lumber yard can be loaded by night shifts. In the morning these are all ready for the electric horse, which comes rumbling and grumbling into the yard, backs up to the nearest trailer, couples on and starts off. The load is quickly shifted to the ground by means of rollers at the point of delivery and the tractor, dragging its trailer, starts back to the lumber yard to pick up another load and leave the trailer to be reloaded again by the yard hands.

The Couple Gear Tractor is a motor vehicle of quite unusual type. It comprises beside the driving apparatus, batteries, couple gear wheels which contain the motors, and steering apparatus. These wheels provide for the independent operation of the tractor, but when the vehicle is connected with a trailer, by means of two bars which are engaged by guides on the trailer and coupled there, the rear wheels of the trailer are lifted off the ground and the tractor, with the trailer, is virtually made a single piece of apparatus.

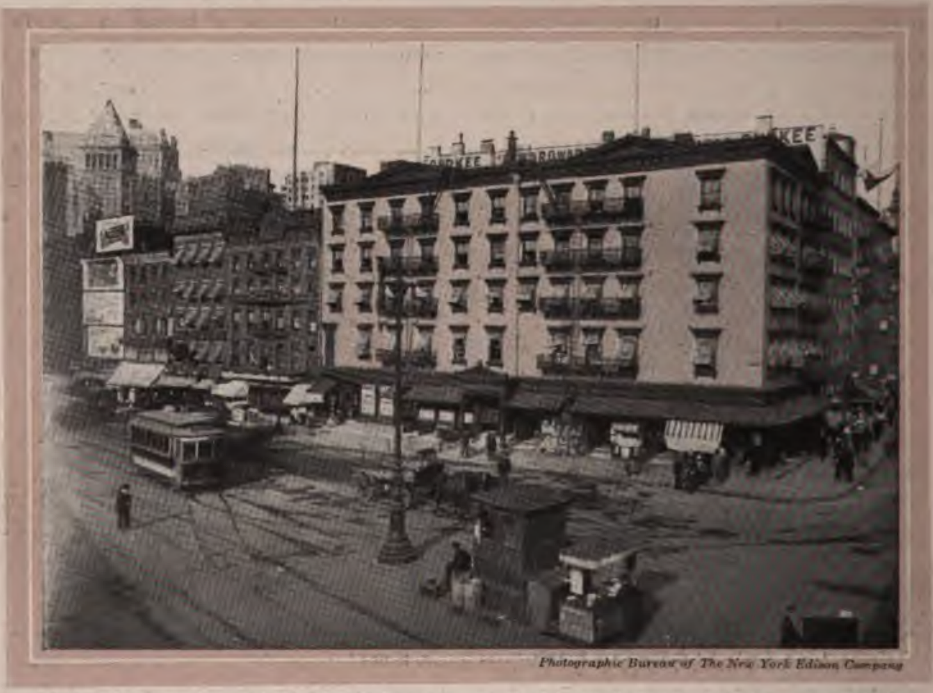
Hauling Lumber and Building Materials to the Scene of Operations is a Specialty with this Powerful Tractor

No Longer "Great"

IN the days before mahogany was confined to parlor tables and grand pianos, a whole warehouse intended for flour-storage was built of it at what is now South and Whitehall Streets. The wood was brought here as ballast by clipper ships from the Amazon country and by luggers of all sorts from ports along the Isthmus. Worthless at the source and dirt cheap at the journey's end, the big logs so valued later on were worked into beams and uprights making a structure of tremendous worth at present day rating.

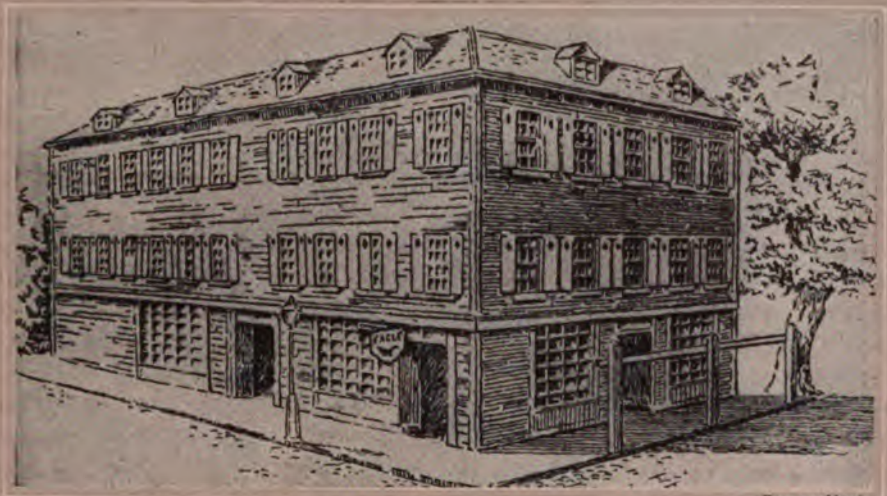
How long the place continued in business is hard to determine. Certain it is that with the growth of the city, guest-storage became as urgent as flour-storage. Quite probably, too, the returns were more attractive. In any case, the warehouse found itself in transformation, platforms giving way to broad and inviting entrances, chutes to marble encased stairways, and erstwhile lofts to floor after floor of handsomely fitted suites and chambers. In a word the building, then the Eagle, today the Eastern Hotel, made a convincing bow to an expectant community.

Opened by Captain John Cole of clipper fame, the house from the start maintained a corner in hospitality.



Photographic Bureau of The New York Edison Company

Among the many changes in the Hotel's Arrangements, the latest calls for the Introduction of Electric Service from the Edison Mains



From an old print

A Warehouse, built of Mahogany. The Eagle, now the Eastern Hotel as it was Originally

This was before clubs had absorbed many of the hotel's most interesting prerogatives. Gatherings of social and political import were matters of course with the result that the old house bears today on its guest-roll the names of the better-known celebrities of the past century.

One of the earliest guests was Robert Fulton who remained here while his boat was in port. To such an extent was Daniel Webster impressed, that nothing sufficed but a practical ownership of the lease. These were the days before he became partial to the old Astor House. His patronage of the hotel meant its frequenting by the political lights of the time and the holding here of many a conference, formal and otherwise. Indeed the mantle of the resort became sadly divided at its descent upon the Gilsey House and the Fifth Avenue Hotel.

Proximity to Castle Garden explained the entertainment by The Eagle of many a notable of operatic and theatrical fame. Here it was that Jenny Lind stopped during her engagements at the Garden; and here shrewd old P T Barnum made his headquarters along with his cement man or "Cardiff Giant" whom a well-grounded skepticism counselled lugging night and morning to and from safe quarters in his chamber. By this time the house had grown to be New York's hotel par excellence and its fame had spread broadcast.

With the advent of the "Great Eastern," the hotel, always of a seafaring interest, adopted the name of the historic vessel, though the *Great* has long since been done away with.

The convenience of the house for Governor's Islanders appears in its welcoming of practically all the officers stationed at the Island in the sixties. Though mere lieutenants and captains at the time, Generals Miles, Corbin, Grant, Hancock, and Bliss have all been guests, and frequent guests at the old hostelry.

Photographic Bureau of The New York Edison Company

The Newstand, by Virtue of Fifty Years' Service, is one of the Oldest in the City

In the early sixties the hotel was the scene of much political activity. It became the chief resort of Hank Smith of Tweed and Tammany fame and through this meaningful circumstance a centre of great and lasting influence with Whitehall boatmen and canal-men who then wielded a controlling authority in water-front affairs. Indeed, most of the politicians were daily visitors, and many an event in New York political history might be traced to these gatherings. The Great Eastern was also headquarters for the tow-boat men. "Mike" Moran, "Mike" Flannery, and others of note in harbor annals were frequenters here of hardly less account than "Dynamite Johnny" O'Brien. "Johnny," lest the reader forget, was a thorough filibusterer to whom the hotel proved a periodic refuge. After shipping a cargo of arms to Latin America, "Johnny" on eluding the revenue officers, was wont to meet his accomplices in the "long room" of The Great Eastern to arrange further the course of South-American progress (?).

Of late years the house has become the rendezvous of Norwegian skippers whose sturdy freighters yet predominate among the harbor shipping. These hardy navigators are sure always of finding their seafaring friends here; and the "long room" of longer political association has since changed to the spirit of nor'westers and tales of the Cape blizzards. Now as in former days skippers on the eve of sailing stock up with cigars and tobacco at the old black walnut counter in the hotel office and lay in a supply of marine literature at the newsstand on the street in front. This stand, by the way, by virtue of fifty years' service, is one of the oldest in the city.

The rooms of the hotel, like all interiors built at the time, are exceptionally large and high ceiled. The suite occupied by Jenny Lind embodies one room thirty-five feet by twenty-seven. In the course of recent renovating and remodeling Mr. Bittner, the actual proprietor, has divided the larger rooms into two chambers. Improvements have included as well the replacement of old style electric lamps by the newest the market affords, while Edison Service affords the needed current.

Saving Space

IN the center of New York's most fashionable shopping district, is the shop of L P Hollander and Company of Boston, Newport and points west, the "points west" signifying the fact that representatives of the firm make semi-annual business trips over the United States, covering the big and little cities from coast to coast.

Of Boston origin the Hollander firm nevertheless is well at home in the Fifth Avenue atmosphere; an atmosphere which is to New York what that of the Rue de la Paix is to Paris, Bond Street to London and Unter den Linden to Berlin.

Specialists in women's wear of all kinds from boots to hats, and depending upon a clientele which demands not only the utmost in quality and style but in service as well. The New York Edison Company takes no little pride in the fact that it has recently been able to encompass the removal of a private electric light and power plant and substitute therefor current drawn from the Company's mains.

Photographic Bureau of The New York Edison Company

The Eight-story Fireproof Building at 550 Fifth Avenue was opened Five Years ago. Edison Service Recently Displaced the Generating Equipment

About thirty years ago L P Hollander and Company opened a New York store, the original location being at 290 Fifth Avenue. This, at the time, was a step of no little moment, for Boston had been the only field in which the Hollander Company had done business. Established in 1848, the firm had long maintained a store on Boylston Street where women's wear of all kinds and in addition, men's furnishings were the stock in trade. Growing business, however, and a foresight which perceived undeveloped possibilities in New York induced the move, and in this the management of the Company was right.

From the time its doors were first opened the New York store has prospered, and no one location has been commodious enough to hold it for very many years at a time. From 290 Fifth Avenue the store eventually moved to 220 and, from there, about five years ago, a final move was made to 550. At this address a modern, eight-story, fireproof building was erected and its four lower floors were fitted up in sumptuous fashion. The floor which opens upon the Avenue presents one of the most delightful showrooms to be found in New York's fashionable retail district.

The four upper floors of the Hollander building are devoted to manufacturing purposes, for the greater part of the company's stock is custom made from models of its own importation from Europe, or from modes of its own creation. Gowns, suits, dresses and hats are made right in the Fifth Avenue building, and for this purpose no little electricity is used. The workrooms are all equipped with motor-driven sewing machines, electric irons and other electrically operated devices, including fluting and plaiting machines. Special attention has been given to the lighting of the workrooms, and each worker is supplied with an individual shaded incandescent lamp, arranged directly over the work-table.

Photographic Bureau of The New York Edison Company

The Old Generating Plant was Removed Piecemeal through the Sidewalk Grating

Photographic Bureau of The New York Edison Company

Space Formerly Occupied by the Generating Plant now serves as a Shipping Room

The elevators in the building are electrically operated and draw current from the Edison service board, as does also a pneumatic tube system which connects the various departments with the cash and credit desks. A ventilating system, which provides fresh air for the showrooms and the workrooms throughout the building completes the electrically operated equipment.

It is an interesting side light on the Hollander business that even during the five years in which it has been located in its newest quarters an expansion has taken place which is even greater than was anticipated at the time the move was made. This, despite the fact that what was deemed adequate space for some years to come was provided for when the change took place. This urgent need for more room was met in the change from private plant operation to Edison Service, the solution being found in the removal of the generating equipment and the conversion of the space thus freed into shipping and receiving rooms. The only other alternative was to lease additional space in adjoining buildings.

When the comparative cost of the two proposals was figured out, the balance, even including the loss incidental to the scrapping of the old generating equipment was overwhelmingly in favor of the more reliable and dependable Edison Service.

Photographic Bureau of The New York Edison Company

By Night, the Show Windows Display a Tempting Array of Women's Apparel

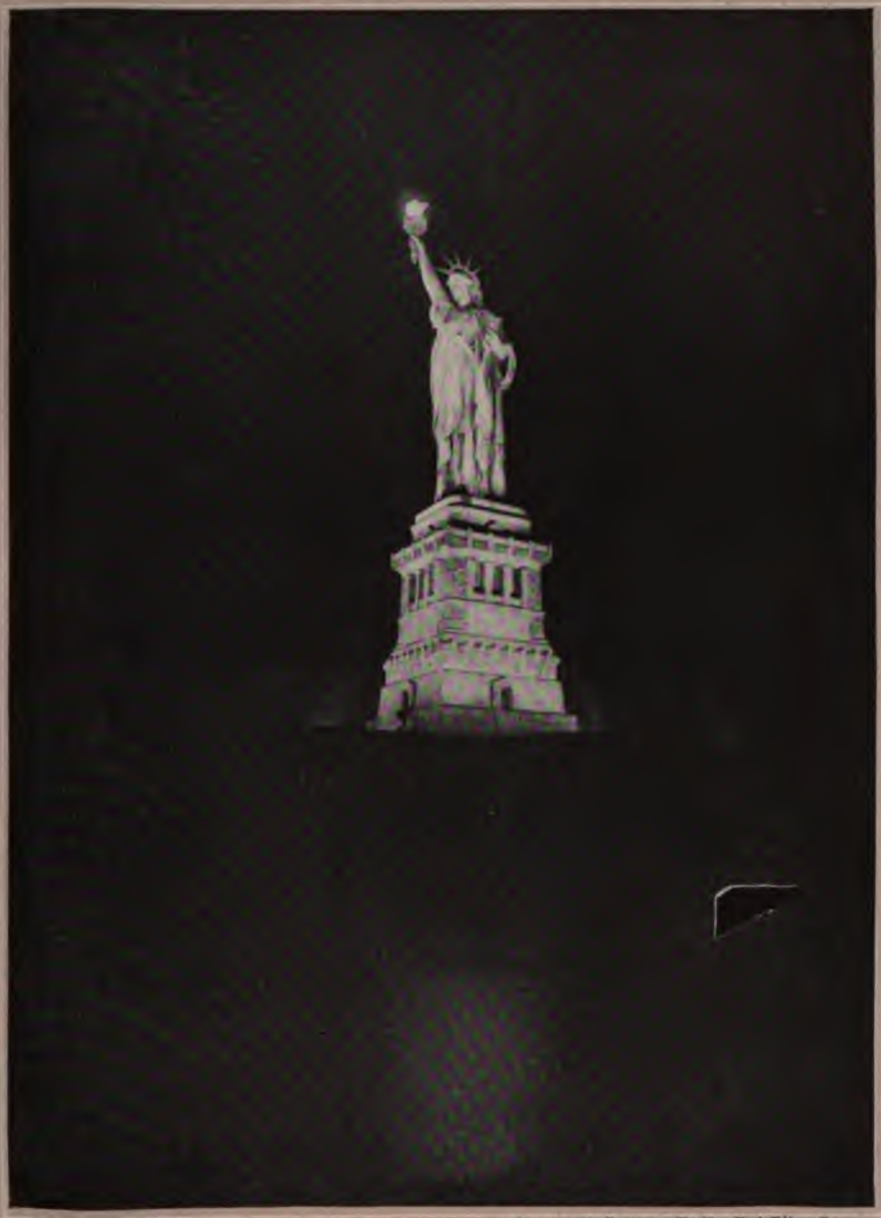
The work of plant removal which was finally undertaken proved a ticklish job, for the machinery had been installed at the time of the building's construction, when space was no object, and passageways had considerably greater dimensions than when finally completed. The electric plant finally had to be taken entirely apart and removed piece by piece through the sidewalk grating, a task of no small magnitude.

Photographic Bureau of The New York Edison Company

Shooting Across the Sky, the Comet-like Airplane of Miss Ruth Law provided the Spectacular Feature that Served to add to the Beauty of the Illumination of the Statue. Current Carried by Submarine Cable from the Lines of Public Service Electric Company Supplies the 246 Projectors which Throw the Illumination on the Statue

Photographic Bureau of The New York Edison Company

In Keeping with the Occasion the Big Buildings of Lower New York were Brilliant with an Illumination which Poured from their Thousands of Windows



Photographic Bureau of The New York Edison Company

" . . . . the only light that we can contribute to the illumination of the world, is the light that will shine out of our life as a nation upon that conception and that image."—President Wilson

While You Wait

AFTER you have ordered your dinner and have settled back complacently to await its arrival, the method of procedure by which it is finally placed before you concerns you but little, save perhaps, as a pleasurable anticipation. However, in the ten minutes or so which elapse before your order puts in its appearance, there has been much bustle and, as like as not, no little confusion, below stairs, for even in the best regulated of culinary departments the chef is apt to be of an irascible disposition and given to much fussing and fuming. The half dozen articles or so which go to make up your repast must each be secured from a separate section of the huge kitchen, a final touch or some additional cooking given to each, and at last the whole assembled in a manner tempting even to the most jaded appetite.

But whatever your choice, and whether you be eating in a white tiled restaurant or an exclusive club, the chances are that your meal will have been prepared on a range manufactured by the Duparquet, Huot and Moneuse Company in their factory at 245 Lafayette Street, New York City. Here every conceivable sort of kitchen appliance is produced to order and exactly to fit the requirements of the restaurant or hotel for which it is designed. Kitchen sinks, ranges, platewarmers, steam tables, hoods and

Photographic Bureau of The New York Edison Company

Motors are the Life of this Factory. Here they are operating Grindstones

Photographic Bureau of The New York Edison Company

One of the Spot Welders in the Duparquet, Hout and Moneuse Factory

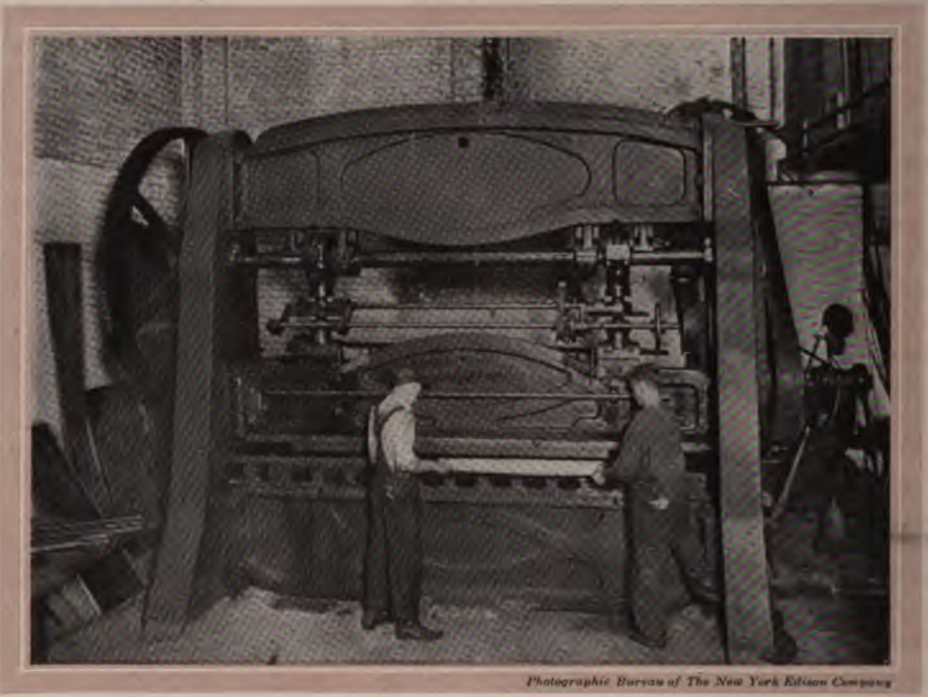
grills are a few of the many articles which are turned out. For many years this firm has been supplying equipment for the large hotels and restaurants throughout the country. The chain of Child's restaurants, for instance, which stretches from coast to coast uses the product of this factory exclusively in its kitchens. The Plaza Hotel, the Astor, the McAlpin, the Biltmore, to mention but a few, have all had their ranges and kitchen tables built here. The Bankers Club, when it moved into its new quarters in the Equitable Building, placed an order for a kitchen outfit which was to be entirely electrical. The ranges, the plate-warmers, the warming tables and the grills, all to be electrically operated, were built to order by Duparquet, Huot and Moneuse.

It is an interesting fact that in this factory on Lafayette Street where all the actual construction work is handled, electric power is being used exclusively. Motors totalling over two hundred and fifty horse-power draw their current from the mains of The New York Edison Company, and not only motors, but electric spot and arc welders are also in daily use.

In the basement of the structure, which is an old fashioned five story factory building, are two huge 50,000-pound presses, one of which is used to cut and the other to bend the 3-16 inch steel plate forming the frame of the French range. These presses are unique in the range manufacturing business; other factories hammering the metal out by hand. The distinctive feature of the French range is the fact that the frame and the ovens, and in fact all parts but the stove tops, are made of sheet steel, the stove tops being the only cast iron in their construction.

The upper floors of this stove factory are devoted to the assembling and other cutting and shaping processes. The stove frame, having been cut in the basement, is sent on upstairs where it is fitted, shaped and either riveted or welded to the other parts. Electrically operated drills, emery wheels, cutting and stamping machines and welders complete the process of manufacture and finally on the top floor the finishing touches are given.

Sanitary kitchen tables made of a single piece of steel, rounded and turned under at the edges, are a speciality of this factory and these are usually shaped on one of the presses in the basement. Hoods to be suspended over ranges and steam tables are also shaped in the same way and these are sometimes made of unbelievable size. Large hotels and restaurants frequently have these of a length exceeding fifty feet.


Photographic Bureau of The New York Edison Company

This 50,000-pound Press is Used to Shape the Sheet Metal Used in Range Manufacturing

The manufacture of kitchen equipment of this sort is a complicated process, inasmuch as every piece is made to meet different specifications. Therefore there can be little duplication of standard parts. The stove factory must of necessity be a boiler shop, a plumber shop, a gas fitter's, an electric wiring contractor's, a casting shop, a steel mill, and a carpenter shop; for each and every one of these trades enters into the manufacturing processes.

The adoption of electricity throughout has greatly simplified matters however, and in addition has greatly increased the production of the factory. In truth, business has assumed such large proportions that a new factory is contemplated.

Ticker Talk

THE mystery that lurks about the news ticker has at one time or another appealed to all as a field for casual invesitgation. There are few indeed who have not wondered what is at the other end of the ticker-tape. This blank, emotionless, inanimate strip of paper by the mere process of unwinding and passing through the clicking brass mechanism under the glass case becomes the actual talebearer of fortunes made and lost, of battles won, of life or death and all that is vital to mankind. Happenings throughout the civilized world are reported by these busy little wheels that click off letter after letter in a most undramatic way.

Since its invention back in the "Sixties," the ticker has been the quickest method of disseminating the news of the moment to the ever-eager public. Whenever reports of particular conditions of affairs, or of meetings of importance are desired, those interested turn to the ticker for the information. And thanks to the system and dispatch with which these news-distributing organizations are operated the details are at hand a few minutes after the event has occured.

There are several fields of usefulness for the ticker, and as a result there are several ticker systems in New York City. All of course are news tickers in a general sense, but some specialize on particular forms of news, as, for instance, the ticker systems that are operated under the direction of the New York Stock Exchange, which deal only with the sales of stocks and bonds made on the floor of the exchange. Then there is the general news ticker which is operated for the purpose of distributing news broadcast, and still another system which distributes news to the news-distributors. This last is operated for the purpose of supplying the local papers with local news only.

Reporting Stock Sales

System, combined with lighting swiftness and unusual accuracy are the conspicuous features of the ticker organization. This is notable in the case of the New York Stock Exchange tickers where market prices are flashed to the public almost as quickly as they are established. To do this, of course, requires trained employees and perfect mechanism, and all of these are at hand on the 'change.

At four points on the "floor" are expert telegraph operators who take the market reports "red hot" from the floor reporters, or uniformed attendants who dodge about among the various "crowds" taking account of each sale.

As each new sale is made the telegraphers flash it by Morse key to the eighth floor of the building where an expert operator sits with four resonators on either side, each of which is manned by an operator. Just befor him is a big transmitting dial or circular keyboard and it is by means of this that he operates the tickers. Electric contacts are made with each key of the dial in the manner necessary to spell out the name of the stock, or print the proper numbers and fractions. This contact is carried by wire several blocks into the basement of the distributing station at 18 Broadway where the transmitters, switchboards and all the other operating mechanism of the ticker system is located.

Here banks of controlling relays, transmitters and other telegraphic equipment are in constant operation, and from this point like the legs of a spider radiate the wires that operate the thousand and odd tickers in the various stock brokerage offices in the financial districts. Of all the different ticker services in New York, this one is guarded the closest of any. Outsiders are not allowed in the operating room in the exchange building, and a trained corps of mechanics make frequent rounds inspecting each ever-active instrument.

Another form of stock ticker, not operated by the exchange, is known as the Gold and Stock Telegraph System and is operated for the purpose of informing banks, trust companies, and various other responsible institutions of the fluctuation of the stock and gold market. Added to this is a combination of tickers used by the Western Union Telephone and Telegraph Company to tell the activities on the cotton, grain and coffee exchange in New York City.

Still another ticker service, and one probably better known than any other, is the general news ticker operated by an independent firm known as the Stock Quotations Telegraph Company, with headquarters at 26 Beaver Street. While a great deal of the business of this ticker service is to convey news of the stock market to various clients, it also specializes in market conditions and reports from all corners of the civilized world, as well as telegraph news of a general interest supplied by one of the large news-gathering associations with international correspondents.

Photographic Bureau of The New York Edison Company

A Bank of Test Tickers on the New York Stock Exchange System

The types of instruments operated by this Company are not like the conventional tickers that have been in service since the Civil War. One is very much larger, and the details it gives are more complete in every way. Here, quickness and accuracy count for everything. As fast as the telegraph news is flashed in from various corners of the world, it is sent out again on the ticker system and within a few seconds after the news is known in the headquarters office, it is appearing in type on the ticker-tape in every one of the thousands of places where ticker service is used. This speed of service is only possible through the thousands of miles of telegraph lines that the ticker company has at its command. Direct lines connect all of the principal market centres such as Boston, Chicago, St Louis, Pittsburgh, Philadelphia, Washington, Baltimore, Ottawa, Montreal and Toronto, and at many other points of importance. All these lines reach the Beaver Street building eventually, and the operating department or "wire room" of the company is large enough to do credit as the central office of any large city.

Photographic Bureau of The New York Edison Company

Where Edison Current enters the Ticker Service

Of course with so much depending upon constant operation, dependable electric service is necessary and for that reason the big building at 26 Beaver Street, which is occupied for the most part by the Stock Quotation Telegraph Company, is supplied with Edison service. Electricity from Waterside supplies service to the generating room of the ticker company, and it is by means of Edison current that the news is flashed broadcast to the thousands of points in New York City and vicinity.

The New York City News Service Association also operates a ticker system for the benefit of the various newspapers that subscribe to their news-gathering service. This is an association for local news only and one of the methods of distributing the "gossip" to the "city desk" of the various papers is by means of a constantly clicking ticker or page printer of the same type as the instrument used by the Stock Quotation Telegraph Co. Reporters are stationed at the "news" points in the city and special assignment men are detailed to cover all the local events of importance, exactly the same as the city staff of the average newspaper is operated. These men report to their main office by telephone or telegraph, and the news they have gathered is flashed via ticker to the various editorial rooms.

Specializing on financial news from all corners of the world, the Dow Jones Company of 44 Broad Street, also operates a ticker or telegraph printing system among the various banks, brokerage houses and other financial institutions of the city. This in a measure resembles the system but recently described in connection with the work of the Stock Quotations Telegraph Company. It is known as a "one wire" system.

The ticker in itself presents a

Photographic Bureau of The New York Edison Company

By Manipulating this Dial Keyboard the Operator Flashes the News to Every Instrument on the System

highly interesting achievement in mechanics. Since the middle of the last century the art of printing by telegraph has been the subject of a great many experiments, Edison and other men of genius taking an active part. As stated before, there are several forms of tickers but the best is the page printer referred to above and now used to send general news broadcast. Fundamentally the machine is a telegraphic printing machine which operates by the pressure of keys at a central station. Electric impulses are sent out over a two-wire system. As each impulse is received it actuates one of a series of magnets in each machine, the magnets serving to furnish the action that revolves the type wheel and depresses it so as to make it come into contact with the type cylinder across which the paper is moved.

The entire action of the machine is automatic. The paper is fed from a cylinder operated by a spring which is automatically wound, and practically every movement of the instrument is directed by magnetic action thereby enabling a single operator at a central point to transmit messages to a hundred or more machines in as many different localities.

With all these attributes it can be easily understood why the ticker has been selected as the quickest and best way of distributing news. The mere touch of a group of keys delivers a message to the ends of a group of wires wherever the ends may be.

Modern Bridge Operation

FIFTY years ago the cities of New York and Brooklyn were separate and distinct municipalities. The fact that five lines of ferries plied back and forth across the river did not materially shatter the separate identities of these two cities. Transportation facilities were inadequate; delays were frequent, and even the most loyal of Brooklynites had to concede that the trip required both patience and endurance. The cities were things apart, divided by that barrier of Nature—a body of water—and it was inconceivable to consider them otherwise.

In 1870, however, in spite of much popular criticism of the plan, work on the masonry for the foundation and towers of a suspension bridge was begun. To imagine a structure with a single span of nearly 1600 feet was too much for the conservative city dwellers, and many were the predictions of awful catastrophes that would follow so foolhardy a venture. But regardless of discouragements of every description, the work progressed slowly and steadily and in May, 1883, Brooklyn and Manhattan were linked together. This physical union realized, it was only a matter of time before the bond was still further strengthened. Brooklyn and Manhattan united as Boroughs in a Greater City some fifteen years later.

Photographic Bureau of The New York Edison Company

The New York Connecting Railroad Bridge Over Hell Gate forms the Latest Link in the Union of the Boroughs of the Greater City

Photographic Bureau of The New York Edison Company

The Series of Bridges across the Harlem Uniting Manhattan and the Bronx

Then followed, as the city grew, the Williamsburg and Manhattan Bridges and further to the North, the Queensboro and the railroad bridge across Hell Gate to Queens.

The past twenty years have witnessed surprising changes in the methods of bridge construction, and co-jointly with this, new and better systems of illumination and operation. In this respect, the Manhattan Bridge furnishes the best example, as it is the only one of the "big four" structures in the city in which electricity played a leading role in the drama of bridge creation.

When the work of building the piers was under way, hoists and derricks (the sturdy "hands" of the engineer), were set up, and here it was that electricity proved of the greatest service. For certain parts of the task, in particular where power was wanted in scattered locations, electric hoists were found to be especially well adapted and numbers were installed. The next step after the completion of the towers and the anchorages was the spinning of the great cables. This was done by special electric machines that ran back and forth on swinging steel ropes pulling the strands after them. Electric engines hauled materials to and from the docks.

With the bridge itself erected, there yet remained a myriad of details before the structure could be considered finished. Among other tasks there were the approaches to be laid out, and the handsome stonework of the plaza to be set in place. The approach of a bridge requires not only the science of the engineer, but the skill of the artist as well, if it is to do its share in the task of producing a city beautiful. In the case of the Manhattan Bridge, New York has been particularly fortunate in this respect. The city is now completing the imposing plaza at Canal Street and the Bowery, without doubt one of the finest bridge approaches in the world. The arch through which the traffic enters the roadway is replete with magnificent stone carving, and the whole effect is worthy of the greatest of cities.

The enormous quantity of stone used on the bridges presented a problem for the stone cutters, but electricity again came to the fore this time in the operation of a magnetic saw. The cutting was done by chilled steel shot held by magnetism to a nine-foot blade. So accurate was this device that granite was cut into slabs five-sixteenths of an inch thick.

On the Queensboro Bridge recently, electric air compressors were employed in drilling holes for the reconstruction of the pavement. On the Williamsburg and Brooklyn Bridges, electricity is also used for air compressors in the work of drilling and for cleaning preparatory to painting.

Runaways are always dangerous, but particularly perilous on a bridge where the frightened animal may stampede other horses or may dash from the roadway into pedestrians. An ingenious device is used on the Williamsburg Bridge for handling this situation. At a signal from the policeman on post, the gate-keeper presses a button and electrically impelled gates swing out at an angle from either side. They do not quite close, and the horse heading for the opening finds himself checked. The hubs of the wheels have been caught by the converging sides of the barricade.

Some conception of the transportation facilities afforded by the huge East River spans may be gained from

Photographic Bureau of The New York Edison Company

The Manhattan Bridge, now Completed with the Exception of the Approaches, is the Greatest of the Bridges Between Manhattan and Brooklyn

the statistics recently compiled by the Department of Bridges. If all four structures were put into use at the same time, and each crowded to the maximum capacity allowed for safety, 705,500 passengers could be carried over in one hour. This means that the combined populations of London, Paris and Berlin, twelve millions, could be transported from Brooklyn to New York in seventeen hours. On the other hand, the entire United States Army, of some 97,000 officers and men in ordinary times could cross the bridges in less than forty-nine minutes.

Besides the big bridges there are as many as thirty-eight smaller ones under the jurisdiction of the Department of Bridges of the City of New York. This number includes all kinds from the ordinary swing bridges to bascule, retractile, steel arch and fixed bridges, spanning the waters of the Harlem River, Spuyten Duyvil Creek, Mott Haven Canal, Bronx River, Westchester Creek, Gowanus Canal, Coney Island Creek and other bodies of water. Nine of these alone span the Harlem, not to mention the structures operated by private corporations, and so closely has the Island of Manhattan become welded to its neighbors that it is difficult perhaps for the residents to realize that they are islanders at all.

All these small swing bridges are operated by electric motors, the last two to make the change being the Third Avenue and Willis Avenue bridges. These were connected to the lines of The New York Edison Company in 1914—completing the list of bridges supplied with power and light from the central station.

No stranger considers his New York visit complete until he has made a trip to the water's side where he can view the looming towers and the great spans of light that part the darkness above the shadowy forms of passing craft. It is this electric illumination of bridges that has made the four East River structures famous throughout the world. Immense, majestic in daytime, with their symphonies of lines, they take on added grandeur as the material features melt away into the night and the mysterious dots of light spring out like arms of the city stretched to its neighbor across the stream.

Mastery

Winds have power—so have I;
Waves have power—"More!" I cry.
I am greater—they are great;
I am king and they must wait.
I can crash!
I can lash!
They are weaklings when *I'm* nigh!

Day illumines—so can I;
Matter kindles—"More!" I cry.
I am brighter—they are bright;
I am called "the master-light."
I can flash!
I can splash
Into brilliance for the eye!

Sound runs swiftly—so do I;
Strength wakes motion—"More!" I cry.
I am fleeter—they are fleet;
I was born with winged feet.
I can fly!
I can hie
Into space and mount the sky!

Roscoe Gilmore Stott

Photographic Bureau of The New York Edison Company

". . . . the Looming Towers and the Great Spans of Light that Part the Darkness Above the Shadowy Forms of Passing Craft"

Manufacturers and Agents (Continued)

Motors

General Uses

Allis-Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
Russell & Co—56 W 45th St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St
Westinghouse Elec & Mfg Co—165 Broadway

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
[illegible] & Son—540 W 45th St
Graham Jas A—30 Church St

Holcomb & Co D S Inc—241-3 Canal St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Madison Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St

Refrigeration

Automatic Refrigerating Co—50 East 42d St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Madison Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—649 W 43d St
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Snow & Co—531 W 46th St
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St
Wertheimer Sign Co—558 W 36th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—511 W 42d St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro-Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 Broadway
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Shelton Electric Co—30 E 42d St
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—35 Vestry St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Avenue
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James—119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cataract—46 E 41st St
Home Devices Corp (Modern)—Bush Terminal Brooklyn
Hurley Machine Co—147-157 W 42d St
Kandem Electric Co Inc—49 E 21st
National Sewing Machine Co—290 Broadway
Sibley-Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Westinghouse Electric & Mfg Co—165 Broadway
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768— The Lincoln Electric & Repair Shop
Amsterdam Ave 1989 — Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Cons Co
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Canal St 313—Oneida Electric Co
Canal St 417—C & E Engineering Co
Canal St 417—The Maintenance Co
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Fifth Ave 75—H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 819—Thomas Hindley & Son
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 905—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Elec Co
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Elec Cont Co
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Elec Construction Co
West 31st St 109—Jandous Elec Equip Co Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—N Y Elec Installation Co
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 56—Russell & Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Mfg Co

East of Broadway and Fifth Avenue

Beekman St 74—Jordan Bros Const Co
Bible House 78—Thos C Miller
Beaver St 42—Hanover Elect Co
Broome St 114—B H Weinberg
Broome St 434—The Globe Electric Contracting & Repairing Company
Cedar St 16—Wm Truswell & Son
Dover St 8—Hazazer Electric Co Inc
East Houston St 93—I Berkowitz
East 3d St 48—B Ackerman Co
East 3d St 136—H A Schreiber
East 8th St 4—J M Smith & Son
East 8th St 48—American Pressing Iron Co
East 15th St 6—Geo D Beinert Inc
East 21st St 22—The Shultz Electric Co

Department Stores which Sell Electric Appliances

Adams-Flanigan Co—Westchester & Third Ave Bronx Basement
Barnett Bros—Columbus Ave & 74th St Basement
*Bloomingdale Bros—59th St & Third Ave Basement
John Daniell Sons—759 Broadway Basement
*Gimbel Bros—6th Ave & 33d St Fifth Floor
*J B Greenhut & Co—6th Ave & 18th St Basement
H C F Koch & Co—132 W 125th St Basement
Lewis & Conger—Sixth Ave & 45th St First Floor
Liggett-Riker-Hegeman Drug Stores
*Lord & Taylor—5th Ave & 38th St Fifth Floor
*James McCreery—5 W 34th St Sixth Floor
*R H Macy & Co—Broadway & 35th St Basement
Rothenberg & Co—34 W 14th St Basement
Stern Bros—41 W 42d St Fourth Floor
*John Wanamaker—Broadway & 10th St Seventh Floor

*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 West 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Brooklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Clarence L Smith Co Agents)—544 W 30th St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey Street Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent)—236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—Mt Vernon N Y (C)

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Cutler-Hammer Mfg Co—50 Church St
Eck Dynamo & Motor Co—Belleville N J
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Lincoln Electric Co—Cleveland O (Read-Dresser Eng Co—149 Broadway Agents)
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Eck Dynamo & Motor Co—Belleville N J
Edison Thomas A Inc—141 Lakeside Ave Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward-Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Manufacturing Co—165 Broadway

Mechanical and Battery Parts

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Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—2 West End Ave and 64th St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42 St
Phila Storage Battery Co—American Building Broadway and 58th St
Storage Battery Supply Co—239 East 27th St

Manufacturers and Agents (Continued)

Mechanical and Battery Parts (Concluded)

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Willard Storage Bat Co The—228-30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric—Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

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Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

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Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

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Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

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American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf) —303-305 Fifth Avenue
Hospital Supply Co The—53-55 Fifth Avenue
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Ave
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Broadway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—35 Vestry St
Neel-Armstrong Co—29 W 34th St
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 Eighth Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—Fifth Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 E 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
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Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 B'way
White Dental Mfg Co S S—5 Union Square
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Wolff Co Wm F—501 W 145th St

Elevators—Dumb Waiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 W Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
National Elevator Co—62-64 W 45th St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

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American Blower Co—141 Broadway
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St
Curtis Pneumatic Machinery Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—649 W 43d St
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Gerdes Theo R N—123 Liberty St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
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Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

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Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

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Leveridge Chas W Inc—133 Liberty St
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Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

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Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—649 W 43rd St
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
Kandem Electric Co Inc—49 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 B'way

Globes—Reflectors

Dealing William—1 Hudson St
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42d St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—649 W 43d St
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialites Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 17 Murray St
Wicks Electric Co—Cleveland Ohio
Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Low Voltage Direct Current Bell Ringers

U S E M Co—301 West 37th St

(Continued on last four pages)

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Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts, west of the Bowery and south of Catharine St

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Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

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Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by the Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

Foot of 140th Street and North River

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Although electricity has been used for the cutting and welding of metals for upwards of twelve years, its general application for these uses has been rather limited, due no doubt to the lack of supplementary apparatus. Today, however, this handicap has been overcome, and the electric arc is performing an important function in many of the metal working industries.

As long ago as twelve years a New York building contractor used the electric arc to cut away the sheet piling that had been erected as a retaining wall for foundation construction. While the work itself was accomplished satisfactorily it was done at considerable cost in injuries, for the workmen manipulated the carbons without any protection from the intense effects of the rays. The resulting burns were severe and they served effectually to retard for the time further application of the new method of cutting.

◆

From industrial application the electric arc was returned to the laboratory for further experiment, and for several years little was heard from it except in a purely scientific way. This laboratory sojourn however resulted in the perfection of the technic of arc welding and cutting and the improved methods were once more offered for industrial purposes.

The new procedure provides not only for the development and control of the arc itself but for the protection of the operator who performs the work. The latter is accomplished through the use of helmets of special fabric with a transparent front to shield the eyes. Gloves too are included, for the intense heat of the unguarded rays had proved a menace to unprotected hands.

◆

To attempt to enumerate the various industries in which the arc is now used, or to describe the multitude of tasks which it performs is not the purpose of these paragraphs. Suffice it to say that wherever there are metals to be welded or bars or sheets to be cut, the electric arc will be found satisfactory in every way.

There are many points in its favor. First is its speed, and because of this speed there is the second point—economy, economy not only in time but in labor expense and in fixed charges on plant equipment. Then too the equipment for arc cutting or welding permits of flexibility of plant design, for the apparatus may be had in portable units which permit its use anywhere in the factory or shop. In some outfits a single motor-generator will supply several welding or cutting electrodes.

◆

Elsewhere in this issue is a more complete description of the technic, and the processes to which the electric arc is adapted. The power engineers of The New York Edison Company have still further data which are available to those interested in this improved method of cutting or welding metals.

❦

All the world knows the story of the reclamation of land from the sea by the people of Holland. The world knows too that to hold this land has required a never ending series of battles, in which at times the sea has gained an advantage only to be driven out by the courageous people of the polderlands.

Such a fight is just now coming to an end—the people of Holland again victorious—the sea driven out, and it is hoped—conquered.

❦

In January 1916, western storms drove the North Sea into the narrow bottle neck of Zuider Sea. Combined with a windstorm from the North, the pressure was so great that the dikes gave way, and the Waterland region of Holland was flooded, small towns were inundated, and people were driven from their homes. Only the elaborate system of inland dikes and drainage canals together with a coffer dam which was hastily constructed prevented the spread of the flood to the larger cities. As it was, the flooded area reached almost to Amsterdam. Even with the temporary check, there was still grave danger, for a second storm would undoubtedly carry out the inland dikes.

It was in this situation that Dutch courage and resourcefulness combining itself with an unusual and difficult application of electricity saved the country.

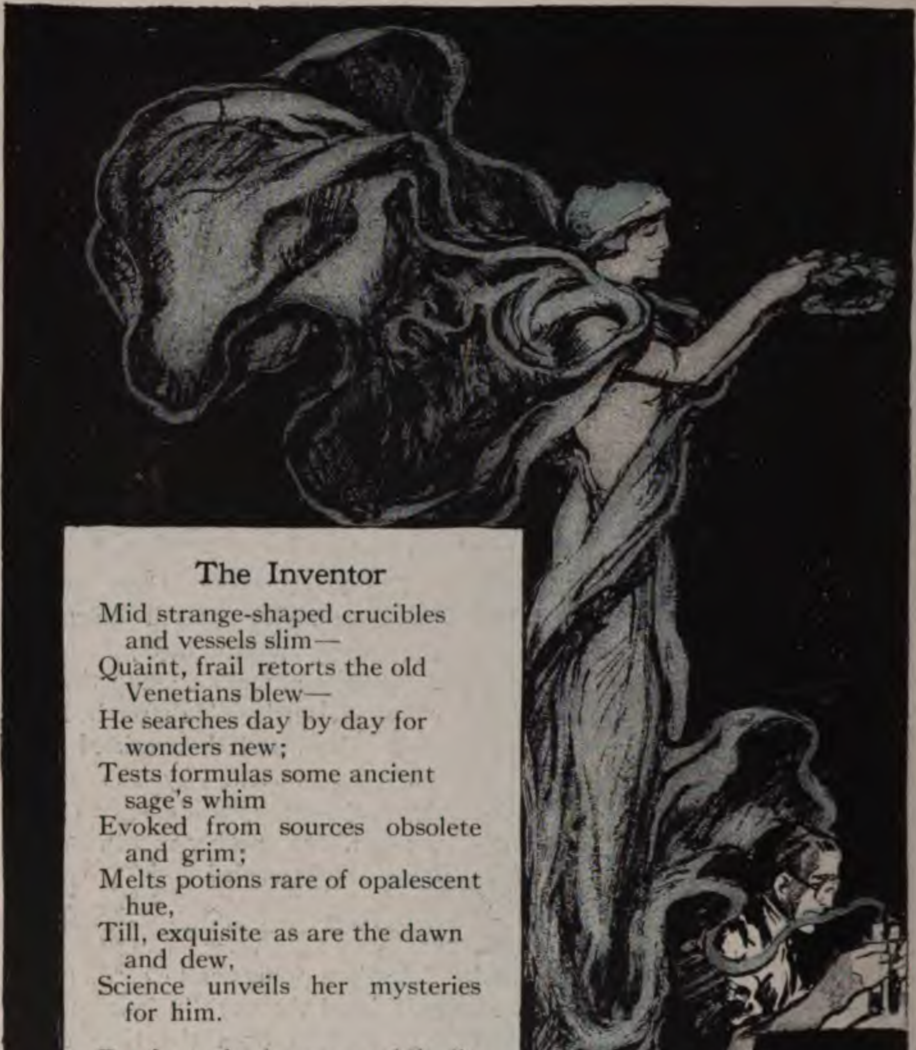
Three and one-half billion gallons of water covered the land. The existing pumping stations had a capacity of 28,000 cubic feet per minute. Nearly four times this capacity would be required to drain the area.

Quick delivery of specially made centrifugal pumps was promised by the Werkspoor Company. The Kennemer Electric Works had on hand enough electric cable to reach from the Amsterdam power plants to the sea, and several motors were available. In the meantime, the broken dikes were being repaired and strengthened.

The floods occurred on January fourteenth. By March thirty-first the pumps had been built, the motors delivered and installed, and the cross country electric cable stretched from Amsterdam, and the work of drainage was started. By the end of April, all the polders had been drained, and another month saw the lower lakes emptied.

❦

Modern pumps and electric motors completed the work in four and one-half months from the time of the break. In 1825 a similar flood but of less area required a year and a half to drain. The flood of ninety years ago was drained by pumps which took their power from the winds. The floods of 1916 were fought with electric energy, and since no power was available at the point of battle the resourceful Dutchmen ran a cross-country line over the flooded area, and brought the current from a distant power house.



The Inventor

Mid strange-shaped crucibles and vessels slim—
Quaint, frail retorts the old Venetians blew—
He searches day by day for wonders new;
Tests formulas some ancient sage's whim
Evoked from sources obsolete and grim;
Melts potions rare of opalescent hue,
Till, exquisite as are the dawn and dew,
Science unveils her mysteries for him.

Far from the known world's din and dust and glare,
He seeks a harvest in the world unknown,
A place of glamour and enchantment, where
Beauty and light for endless toil atone—
Where all is possible, and all may be
His own great gift unto posterity.

Charlotte Becker.

Decoration by C B Falls

Photo by Van der Wyde

Thirty-five Years Ago at the Age of Thirty-five, Thomas Alva Edison Established the Present System of Electric Lighting for New York. The Great Inventor will Celebrate the Seventieth Anniversary of his Birth on February Eleventh

Theatre Lights of the Past

TODAY the average theatregoer watches with mild interest the marvelous lighting and scenic effects shown on the stage before him. Such things have become almost commonplace and the blasé public refuses to acclaim the commonplace.

The development of stage effects, especially through lighting, has been meteoric. For three centuries, from 1500 to 1800, the stage was lighted by candles and oil lamps set in rows across the front of the platform, while the most elaborate effect produceable was to stick a light on the end of a pole, which all the audience recognized represented the moon. Then for eighty years, roughly from 1810 to 1890, came a new era of lighting, with gas as the illuminant. The lighting and effects thus made possible were miracles in comparison to those of the oil lamp and candle period.

The Academy of Music in New York was one of the first theatres to be provided with gas lighting. Every night, long before the doors opened, the three gas-men who constituted the regular house staff began their work. First came the huge chande-

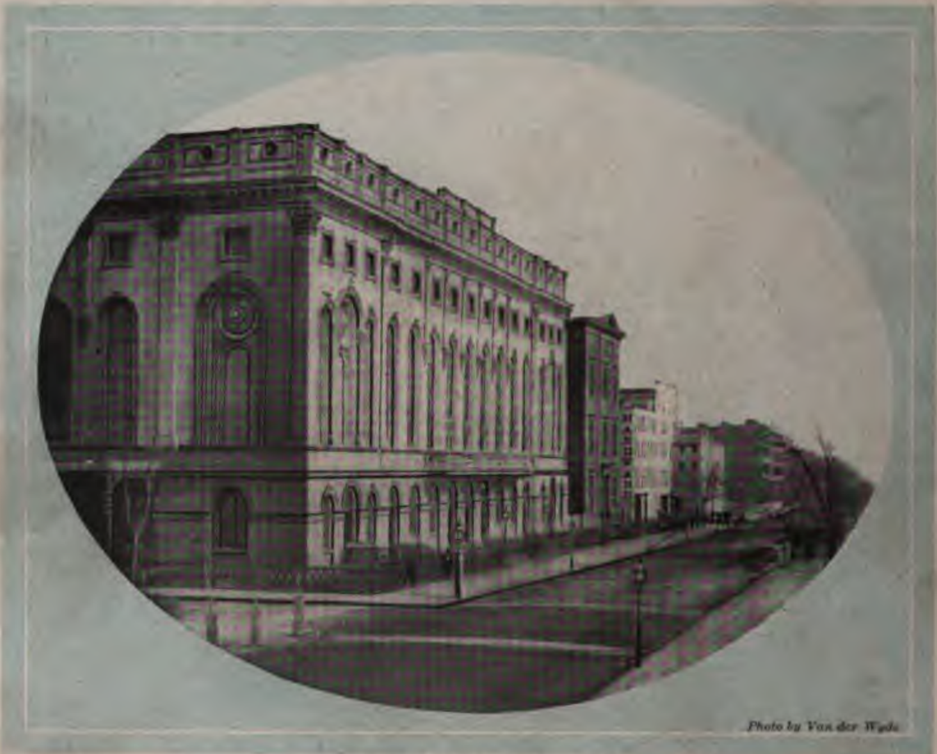


Photo by Van der Weyde

When the Academy of Music was one of New York's Finest Theatres

Illustration from "The Theatre"

The Bowery Theatre, now known as the Thalia, was one of the First to have Electric Lighting. It was Supplied from the Edison Plant in the People's Theatre on the Opposite Side of the Bowery

lier high above the auditorium with its four hundred burners. To reach this the men put together a long fishing pole-like affair on the end of which was an alcohol torch. To steady seventy feet of pliable pole required two men, while a third using a line attached to the end guided it to the gas jets. This chandelier, made up of more than a ton of iron and glass, was the main light for the house. The lights once lit were carefully lowered until just time for the doors to be opened, for that ornamental fixture fairly ate up gas when blazing in all its glory.

Stage lights at the Academy took up almost as much room as the scenery itself. Long yards of rubber pipe trailed across the stage and wings. Only the footlights were permanent and only the crudest stage effects were possible. For a rising moon the gas men of the theatre devised an ingenious system of pulleys by which the light shone behind a yellow disc which ascended into the scenic heavens, dragging its gas tube unseen behind it. If the pulleys creaked and the light wobbled uncertainly it was still a mighty fine moon after the light on the end of a stick of not so many years ago.

Frequently the Academy, the largest hall in the city, was used for public balls, its seats being boarded over. When the performance ended a hoard of workmen would swarm in and work all night and the next day boarding over the seats. Even the huge auditorium of the Academy of Music itself was not large enough for some of the affairs given and Irving and Neilson Halls would be requisitioned. Bridges, ten feet or more above the street, were erected to connect with the main building.

Of course special decorative lighting was required for these events. The labor involved is unthinkable today. For instance, to decorate the bridges, high hoops of colored lights were placed at frequent intervals all along the passageways. These pipe hoops all had to be bent by hand and tapped for burners at just the intervals wanted. Then came the fitting with colored globes, fastening everything in place and connecting the pipes with the main supply. All this and many other special lighting arrangements had to be

Illustration from "The Theatre"

In the Light that Shines in "The Rising of the Moon"—Given by the Irish Players

done in twenty-four hours and taken down again in a like space of time.

The change to electricity for stage lighting was at this very time, from 1880–'90, being worked out. The pioneer was Henry Irving, then in control of the Lyceum Theatre in London. Lighting was one of his hobbies. The limelight under his fostering became the persistent gleam that has characterized the stage ever since, while his heroes were the first to be followed by it in their wanderings behind the footlights. Then Irving turned his attention to electricity, and in 1885 used it in his production of "Faust." Edison's associate, Colonel Gouraud, arranged an installation for the fight between Faust and Valentine. The way the sparks were made, by wiring through the men's shoes, attracted more attention than the fight itself, for electricity was new and fights were old.

Lighting innovations came next and soon the Lyceum adopted electricity throughout. In America there were two theatres to precede it in installing the new system. The Bijou in Boston made the change in December of 1882, being supplied by an isolated Edison plant. Eleven days after the theatre was closed to enable the work to be done, it opened again with Gilbert and Sullivan's "Iolanthe." The other theatre was at Brockton, Mass., and was the first to be lighted with power from a central station. This was two years later, in 1884.

New York's first playhouse to have an electric installation was the People's Theatre in the Bowery, run by H C Miner. The plant, which was installed by the Edison Company in 1885, was elaborate and from it light was supplied to two other buildings in which Mr Miner was interested. One was a drugstore, the other the Bowery Theatre. Cables were laid under the streets, where they have remained until the present day when engineers for the new subway came across them in their excavations.

These theatres, however, were the exception. Generally throughout the country gas was used for almost a decade more. Later one theatre vied with another in the elaborateness of its electrical installations, resulting in a riot of elaborate "effects" overpowering acting and actors, reducing them to mere stage adjuncts. An elaborate setting with unusual effects would carry almost any kind of a show to the heaven of big box-office receipts. In the so-called legitimate field the same germ wrought havoc.

And what about the public? It came and wondered, soaked itself in sensations of eye and ear until marvels of light and scenic effects grew to be the ordinary thing.

Today, the tendency in stage production seems to be an æsthetic bareness, if one may use such a term in connection with light. The right light in the right spot to focus upon the scene—the right bit of drapery and nothing else—that is the latest conception. The Irish players were among the first to strike the new note. One of the plays they put on was "The Rising of the Moon," whose setting pictured a harbor at night, a quay in the foreground, and all lit by moonlight. A fine illusion was produced by simply playing from one side a strong illumination of yellow color, and turning off the footlights altogether. This threw the actors into sharp relief and their bodies made crude, fantastic shadows of inky blackness.

This was but one instance, and the beginning of an idea which has since grown with lightning rapidity. Managers today are beginning a sorting-out, classifying, stock-taking process. When electricity came in, the possibilities suddenly thrown at them were so great it fairly went to their heads. To have a great many novel effects in a play seemed to be their chief idea. They gave all their box of tricks to the public at once, often in one play, but now the edge of newness is wearing off and lighting is becoming more and more of an art.

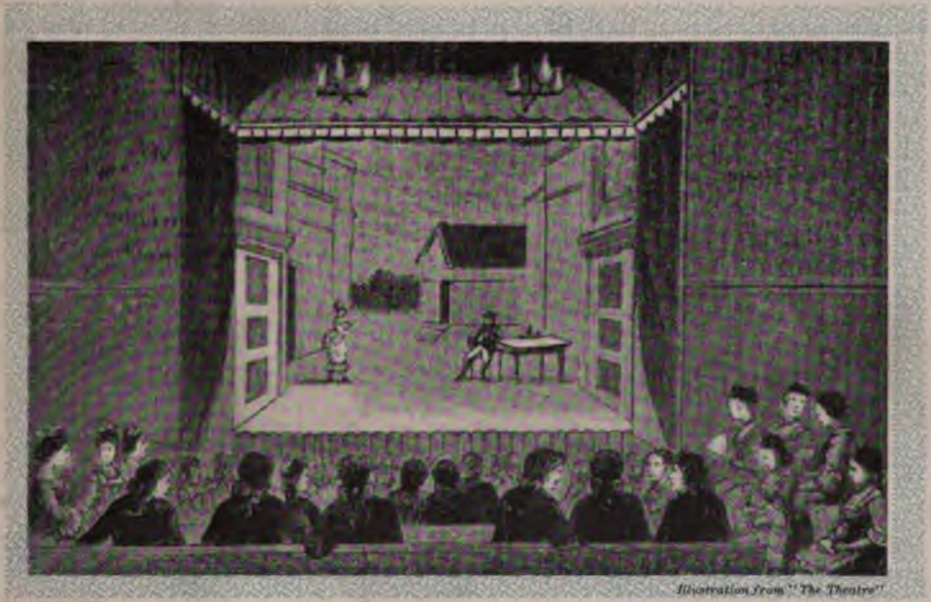


Illustration from "The Theatre"

The John Street Theatre to which Patrons were Requested to Send their Colored Servants at Four o'Clock to Reserve Seats

Arc Welding

WHILE electric welding is not a new art, the advances made in very recent times are so radical as to give the impression that the art itself is of recent discovery. More than two decades ago Elihu Thompson brought out a machine for end-to-end or butt welding. From that time the development of various types of apparatus has gone on with increasing success. The extent of this success is seen in the widening of the field of application to include practically all sorts of metal working. Manufacture of ornamental iron is one instance along with the building of steel frames, boats, railway cars, and the iron reinforcement used in concrete construction. Even the pulleys over which window sashes roll and the cooking utensils used in kitchens throughout the countryside are in many instances electrically welded.

Ridgway Motor Generator for Closed-Circuit Systems

Welding by means of the electric arc is accomplished by fusing the surfaces to be welded by means of the high temperature of the arc and later filling in with additional fused material. The metal on which the welding is to be done is connected to one side of the circuit and the electrode by means of a suitable holder is connected to the other. Controlling equipment must of course be included. The electrode is connected to the negative side of the circuit and the work to the positive, the greater amount of heat being generated at the positive terminal. The arc is established by momentarily touching the electrode to the work and then withdrawing it a short distance.

Among the methods based on the arc principle is the Wilson System which was developed to meet the needs of a trunk line railroad. Some years ago this road was among the first to introduce electric welding which proved to be very economical especially in the working of quick repairs. Its adoption, however, soon revealed the fact that while the most expert operators secured fairly good results on certain classes of work, this was the exception rather than the rule. There were consequently many failures due to defective welds that bore evidence of damage from excessive heat. On these conditions becoming more serious, the road's officials, after satisfying themselves that the heat could not be controlled by any means up to that time discovered, set about developing a system that would control heat and remove the personal equation as much as possible.

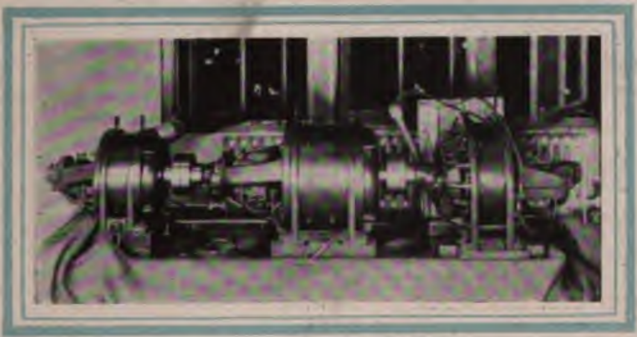
After a long interval of scientific research and experimental work, a machine was developed that could be regulated to produce any predetermined heat at the arc and hold that heat approximately constant as long as the arc was maintained. It was soon found that welds made by the new machine showed an unusual strength and ductility, meeting the demands made upon it during a year's test in all kinds of road maintenance work.

The system referred to is said to be capable of handling cast steel, cast iron, wrought iron, brass, copper, and indeed any weldable metal. Its power consumption is rather lower than the average, while a material labor saving is effected due to the fact that control of the energy is so placed that the operator is not obliged to travel back and forth between his work and the control board. A considerable number of welders are able to work from the one machine, as the power, located at one place, can be distributed to convenient points about the shop. Welding by this means, with the heat controlled at the point of application, is uniform. In other words, a critical temperature is maintained providing on the one side against segregation of carbon and sag pockets, and on the other against the deposit of the mass in globules.

An Arc Welder in Operation on a Tank Cover

A second example of the arc practice now coming much in vogue is very new, being covered by a patent issued only the past Spring. Known as the closed circuit constant current system, it does away with the effect resulting from any breaking of the arc.

This system necessitates the connection of arcs in series. Such connection, due to an



The Wilson Motor Generator Set

arc controller, has no effect whatever upon the operation of arcs but it does mean that each arc of the same polarity must be used on a different piece of work. In other words, each piece of work must be insulated from the rest. With the closed circuit system, the arc controller operates in such a way that the voltage across any one of the arcs can be limited to any given value independently of all other arcs on the same circuit. It also permits of the same degree of adjustment and independence of the current for each arc. This same controller is designed in such a way that the arcs can be given any desired regulation characteristic and this can be maintained independently of the voltage limitation and of the current adjustment.

The system in this way allows of the independent adjustment of each factor that enters into the production of heat in the arc. Each arc can thus be adapted to the particular class of work to be handled and also to the particular workman. One of the more practical results of such a provision is the fact that an unskilled laborer can in one day learn to do certain kinds of commercial welding with this apparatus. In manufacturing processes where the same welds are made over and over again, no more trouble need be experienced in getting operators than is now found in getting helpers for the machinists.

The saving effected by the use of the electric arc process as compared with oxy-acetylene welding arises not only in the saving of labor but in the saving in producing heat. The saving of labor is due of course to a slightly increased speed in the operation and the saving in heat is due to the fact that the given quantity of heat can be produced on the plates to be welded at a lower cost when produced by the arc than by the oxy-acetylene flame. In addition to this fact, the heat of the electric arc is better adapted for welding purposes owing to the fact that it is produced in the metal rather than external to it.

Arc welding is especially valuable on boilers, tanks, and locomotive boiler flues. Joints made by the Slavianoff method are stronger than riveted seams, and may be reinforced and made stronger than the original metal. Even when ground

Four Welds being made simultaneously from the same Generator, a Great Machine-shop Convenience flush, they give a strength of 85 per cent to 90 per cent for thick stock and up to 95 per cent for thin stock.

On boilers, by welding along the seam instead of calking, plates are tied together and need never be gone over. Corroded plates can be built up to their original thickness or can be made thicker. Leaking rivets can be made tight by welding around their edges, while by welding locomotive boiler flues in place with this method, the life of the weld is made practically that of the sheet.

The Arc for Cutting

A further use of the electric arc is the cutting of scrap metal. The voltage made use of depends on whether the electrode is carbon or metal. In the former case the current varies between thirty and seventy volts. For a metallic electrode the voltage will be between twenty and thirty and the amperage from fifty to one hundred and fifty. However, the carbon or graphite electrode is more used for cutting as it is superior to the metallic both in speed and cost and is also hotter and more stable.

In cutting, the arc is kept short in order to concentrate the heat where it is required. Cutting is done by means of a heavy current at low voltage. In order to avoid the inefficient rheostat method of consuming excess voltage, it is customary to use motor-generator sets consisting of a motor designed for commercial supply voltages driving a low-voltage direct-current generator. These sets may be stationary or may be made portable for carriage from job to job about the foundry or railway shop.

The metal to be cut should always be connected to the positive side of the line as approximately three-quarters of the heat is liberated at the positive end of the arc. When the metal is made the negative side it is exceedingly difficult to maintain an arc of appreciable length. This probably is because the metal does not become as hot and consequently less vapor is formed to support the arc. In starting to cut, the arc is held stationary until a hole is melted in one place, after which the arc is drawn along in the direction of the cut desired.

The Last Word

The tallow candle and the lamp
Held frequent, fierce carouse,
(Lasting for many a night) as to
Which better served the House,
But the new electric light kept mum
And still as any mouse!

The candle boasted loud; "My flame
Makes homely folks look well!
And pretty girls look prettier yet—"
The lamp flared up. *"Dew Tell!"*
"How frightfully"—the candle sniffed—
"Of kerosene you smell!"

At last, the House was fully wired
In every room. One night
The candle and the lamp were shocked
By an amazing sight;
For suddenly, without *their* aid,
The whole place blazed with light!

"And nary a match!! 'Tis magic!" cried
The rivals, with a pout.
"Nay!" grinned the pert electric bulbs,
"We put the dark to rout!
You've had your day, now, presto, change!
It is *our* turn to shout!"

Mazie V Caruthers

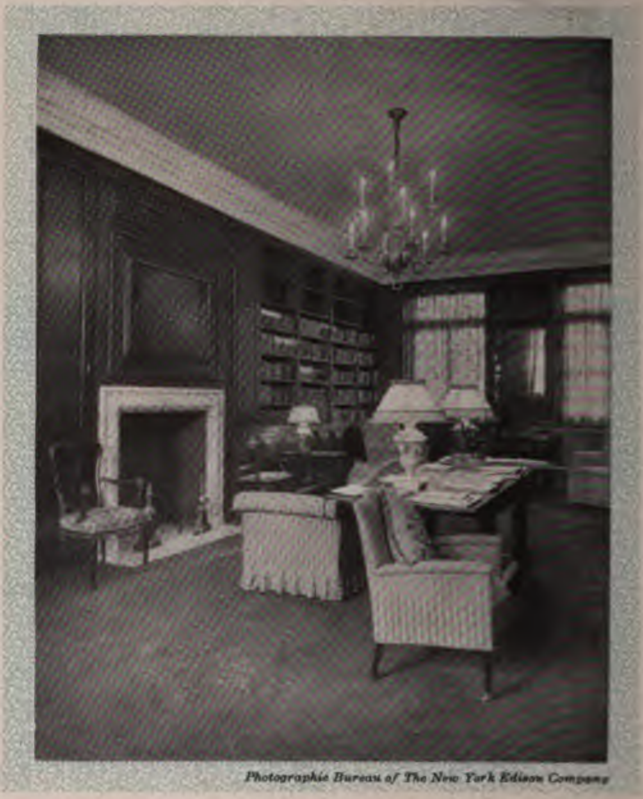
Central Club for Nurses

THERE may be said to be clubs for retirement and a great many clubs for quite the contrary; in fact the non-retiring kind continue in such popular majority that the merits of the former go unregarded. While this may well be their deliberate wish, one of these institutions, by virtue of a new building of unusual interest, has consented to a word of demure publicity.

The Central Club for Nurses is retirement with emphasis. Its object is nothing less than to provide rest and recuperation for New York's trained nurses. Twelve stories high and equipped with all suitable conveniences, the building and its purpose will deserve the endorsement received from a host of nurses' schools and associations.

A broad and simply furnished hall, lighted by Tiffany lamps of the indirect pattern, leads on the one hand to the club's offices and in the opposite direction to a series of reception-rooms. These last comprise not only a generously proportioned parlor furnished with taste, but at one side and on a higher level three distinctly smaller interiors, the object of which is not at once apparent. However, as one studies the matter, their mission in the general plan emerges abruptly. Without them of course the individual touch might be wanting in the recuperative scheme.

The rear of the ground floor is devoted to dining-rooms and kitchens. The main salon is oak, panelled to the ceiling, admirably lighted both naturally and artificially. Communicating with this a private dining-



Photographic Bureau of The New York Edison Company

The Library in Dark Oak is the Special Pride of the Institution

Parish and Shroeder Architects

Photographic Bureau of The New York Edison Company

The Central Club for Nurses at 132 East Forty-fifth Street is Supplied by The New York Edison Company

room is available for small affairs. A broad terrace, brick floored and heavily awninged, opens from here upon an inner lawn.

In appearance, the kitchen first entered suggests any of thousands of "quick lunch" depots, whose tiled walls and stone counters grow increasingly familiar. Its intention, in fact, is to furnish cafeteria service at breakfast and luncheon. Back of this shows a real kitchen from which real dinners are nightly forthcoming.

The second floor, reached if desired by electric elevator, is occupied in great part by the club library. A special gift, the big room, furnished in dark oak and set off by an occasional canvas, constitutes the peculiar pride of the institution. Certainly, if a congenial book and a congenial place to read it in spell library excellence, the present example is lacking in nothing.

Running widthwise of the building and facing the street, a series of committee rooms exhibit furnishings and arrangement worthy of other than mere prosaic use. Still farther along the hall are pointed out some three or four offices already occupied by organizations connected with the nursing field. Remaining floors are taken up with chambers accommodating a surprising total of two hundred and fifty. This figure provides for one-third of the club membership, a body representing one hundred and seventy training schools in which at least a two years' course of training is required. In fact, one seeking admission to the Central Club must be a graduate of a recognized school. The annual dues represent the alarming expenditure of one dollar.

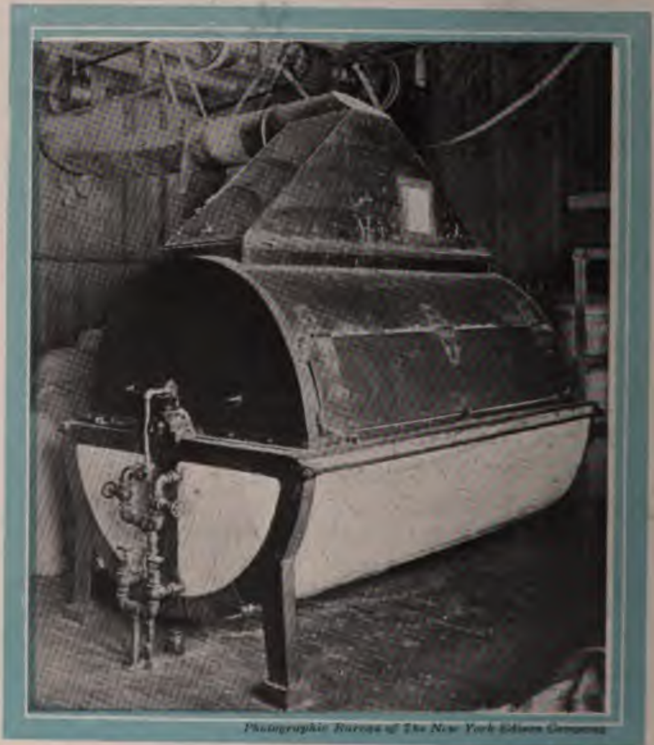
Mattresses & Pillows

WHEN Charles P Rogers and Company decided a while ago to use Edison current, an electric plant in the Rogers basement closed one of the most prolific bed-making careers on record. In fact this particular equipment is credited with having furnished beds and bedding to more hotels and clubs than any other in the business.

Whether or not the plant grew more cantankerous than the average does not matter. With such dependencies as the Biltmore, the Belmont, and the Vanderbilt, not to mention the new Yale and other well known clubs, the company came to realize the unpleasant possibilities of such power supply. The present arrangement insures the steady and dependable operation possible under the Central Station method.

Edison Service is making itself of very special account in the treatment of hair for mattresses. This hair comes from Argentina where the manes and tails of prairie horses are twisted into long hard ropes and shipped north in great quantities. A second source is China, though the hair, human in this case, arrives less regularly than during the queue-amputation days following the collapse of the empire.

The hair ropes have first to be untwisted. The trick is turned by attaching one end to a rapidly revolving motor spindle while the other end is held fast in the operator's hand. Once loosened the long mass is fed into a heavy motor driven mangle. Here a roller delivers the hair to a row of upturned hard wire brushes which remove the last suggestion of



Photographic Bureau of The New York Edison Company

A Feather-steaming Cylinder Kept in Operation by Electric Motor Power twisting and release the product duly carded and ready for stuffing. A second mangle presents a roller studded with hooked spikes intended for short and second grade material.

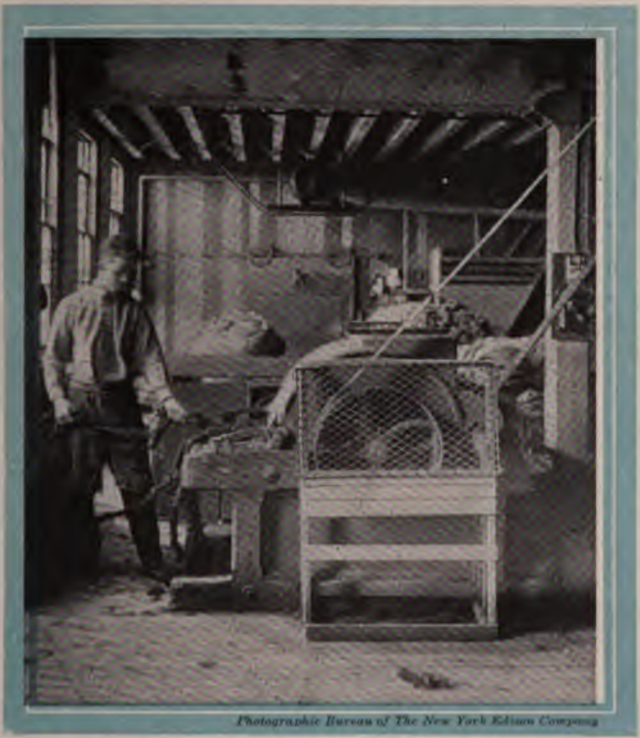
The filling of the mattress tick is done entirely by hand, the stuffing in of the hair and pulling through of the binding cords being attended by all the care necessary to this important branch of the process.

In the handling of feathers steam and electricity share equal honors. The machine in question is an immense steaming cylinder in which the feathers in stated quantities are cleaned before using. Current serves the very useful purpose of keeping the feathers in continual motion by revolving the container.

Leading from this cylinder are blower shafts communicating with a row of booth-like enclosures down the loft. By this means the feathers after steaming are whisked into the bin designed for the quality in question. A damper in the pipe under the bin roof controls such distribution.

On the floor beneath, a double row of electric sewing machines provides for the supply of pillow and mattress ticks. Another similar group is found in the department manufacturing casings for quilts and sofa pillows. Like all the newer sewing machine installations the equipment here is operated entirely by individual motors.

Returning again to the ground floor, a final example of electric drive is discovered in the shape of a spring weaving device whose twisting and turning of wires is accomlished at a rate incredible compared with the old-time hand process. Here as elsewhere about the factory central station drive speaks for an institution as progressive in kind as the patrons it is proud to claim. In fact the presence here of Edison Service is in itself sufficient guarantee of the progressiveness of its surroundings.


Photographic Bureau of The New York Edison Company

An Electric Mangle for the Untwisting and Carding of the Ropes of Horse Hair used in Mattress Making

A Motor Typist

BACK in 1908 a certain J B Pillings suddenly turned against that worthy institution, the typewriter. Not but what it was remarkable. It simply seemed to J B P to be stalling. Here was a machine, clever and capable of immense accomplishment, wasting its time through lack of incentive. To supply this incentive meant eight years study and the use of electricity as embodied in the New Hooven Automatic.

The typewriter, thus reformed and energized, is performing feats calculated to obscure any previous device in the typewriting business. Like that other assertive automat, the player piano, the Hooven makes use of a paper "record." This is prepared on an auxiliary machine showing a key bank, the bars of which make the necessary perforations. Transferred and adjusted, the roll is set revolving by a one-twentieth horse-power motor.

Caught up by a ribbed, steel cylinder, the "record" presser is under a row of steel pins answering to the buttons of the keyboard. Work begins on the arrival of the first perforation. Hereupon the pin concerned trips for a second, but long enough for its attendant arm to catch the rocker-bar beneath the center of the machine. The impulse thus communicated is sufficient to pull down the type-bar itself, and the letter is promptly struck upon the manuscript. Rapidly as the staccato strokes occur and the carrier is sent flying back and forth, the process can be stopped short at any point. By this means the operator is able to insert by hand distinctive wording, such as an address, on the same machine and with the same ribbon as the body of the letter.

Photographic Bureau of The New York Edison Company

The Franklin Institute Medal has just been Awarded to the Makers of the Hooven Typewriter

To watch the apparatus in full swing is to respect words less and the rapid-fire genius of the inventor with growing bewilderment. The mere statement that form-letters and allied matter emerge five times faster than the hand-rendered product conveys little.

The accompanying cut shows one of a number of Hoovens at work in the Follow-up Bureau of The New York Edison Company. Its complacency under the circumstances will no doubt appeal to those familiar with typewriter expression under the moving spell of electric power.

Bucking the Drifts

THE first big snowstorm of the Winter reached the city just in time to complicate the rush of before-Christmas trade. To add to the confusion it happened on a Friday, when week-end deliveries begin to pile up. Saturday, the busiest day of all for delivery service, was even worse, for though the snow had stopped falling it had packed on the streets with a hard slippery surface that made difficult going for all classes of traffic.

While motor trucks experienced the usual slowing-up, horses were the worst sufferers. Many slipped and went down, some sustaining fatal injuries. The Society for the Prevention of Cruelty to Animals answered call after call for the ambulance not only to help some beast to its feet again, but frequently to take it away to the hospital or stable. The number of such emergency calls for the two days of the storm was seventy-six. On the first day, Friday, twenty-six animals had to be removed to the hospital while twelve were able to walk home. The Society does not have more than three or four calls for its ambulance on an average day. Besides all the pain and misery caused the animals themselves there is another unfortunate side to horse trucking in the snow. When a horse goes down traffic is often blocked for many minutes, cars are held up and street conditions generally made intolerable.

The way of the motor truck seems to have been infinitely easier. From the Exide Battery Depot on East Twenty-fifth Street, ninety-four electric trucks started out Friday morning. All but one came back in as good condition as they went out, and that one had mechanical trouble which might have happened any time, snow or no snow.

Photographic Bureau of The New York Edison Company

Not only does a Fall come hard on the Horse, but all Traffic Suffers as it did Here near East Thirty-fourth Street

John Wanamaker's delivery service is handled by both gasoline and electric cars. The deliveries were crowded as usual at Christmas time and it was necessary to make as little difference in schedule on account of the storm

Photographic Bureau of The New York Edison Company

The Heavy Wheels of Motor Trucks grip even a Glassy Surface

as possible. All trucks went out as usual, and they came back at the end of the day, under their own power. Mr Earl, in charge of the service, laughed at the idea of trouble. "There were, of course," he says, "unavoidable delays due to traffic hold-up, but none due to inefficiency of the truck itself."

"Put chains on electric vehicles and they go as well in the snow as on dry pavement," testifies Mr Lang of the Mme Thurn Company, importer of women's wear. His truck had no trouble in the storm, and he really can't see why anyone should who exercises ordinary care in driving under bad conditions. Mr Lang probably wouldn't consider it "ordinary care" to send a truck out on days like that Friday and Saturday with no chains on, but this is the severe test to which the Mallory Steamship Line put its car. Consequently it had to go very slowly, accomplishing less work than usual, but it had no breakdown and finished the day's work without recharging the battery. Next time, however, the Mallory Company will probably equip its cars with chains, for the strain is too great to put on any car, to say nothing of the drivers.

The Pittsburgh Plate Glass Company has a fleet of eight trucks. No breakdowns, no boosts—is their record for the two days, and plate glass is not light handling by any means. Cars are like people and need hu-

Photographic Bureau of The New York Edison Company

Chains help a Truck to get about on Schedule Time

moring when they are up against it, is the theory of Mr Williams, in charge of the fleet. He must have succeeded in instilling this theory into his drivers, for with the necessary humoring of their cars they all got along without any trouble.

Brooks Brothers and Franklin Simon have the same sort of deliveries to make with their trucks—not very large packages, most of them to New York and Brooklyn addresses. This service is naturally taxed to capacity just before Christmas, so that two stormy days seemed disastrous. "How did your trucks stand the strain?" was the question asked each store the following week. Said the superintendent at Brooks Brothers, "the storm didn't trouble us at all." "Excellently well," answered Mr Ward of Franklin Simon's, who had twenty-four cars on duty at the time. In both cases less ground was covered than usual, as was to be expected.

For deliveries as far north as Fifty-ninth street the Hammacher-Schlemmer Company, 133 Fourth Avenue, uses a fleet of eight electric trucks. Their work as described in a previous issue consists of short-hauling with frequent returns to the store to reload. Mr Fausel, manager of the delivery service, reports no trouble on the two stormy days as all the trucks went out as usual and performed their work without any accidents or need for recharging the batteries. Mr Fausel said he was perfectly satisfied with the performance of his trucks. This concern is an old time user of electric vehicles, having purchased the first car in 1903. Another concern which maintains a large fleet is Gimbel Brothers. Their seventy-two trucks stood the strain of the snowstorm well, so that deliveries were but little delayed. The superintendent of the Gimbel Garage said that he was well satisfied with the service given by their fleet which suffered few delays during the stormy days.

Lest the writer be suspected of undue prejudice, it is conceded that not all electric trucks came through the storm with such remarkable records. Some had their troubles. Starting out in many cases without tire chains and with no provision for overcoming the difficulties of unusual traffic conditions it is not to be wondered that they found the going hard. Yet taken on the whole New York's great fleet of electric trucks amply lived up to the faith, not only of their builders, but their operators as well.

Photographic Bureau of The New York Edison Company

"Get a Truck," thinks everyone!

Photographic Bureau of The New York Edison Company

The Old House at the Foot of Sixty-first Street seen in the Gray of a December Twilight

Photographic Bureau of The New York Edison Company

Looking through the Snowy Dusk of a Winter's Afternoon toward the Queensborough Span

A Relic for Relics

MOST New Yorkers think of "Dyckman" as a station on the Subway, and the extent of further information is usually a vague impression that the land in the neighborhood probably once belonged to Dutch Settlers of that name.

So it did—some four hundred acres of it, making up one of the largest farms in the history of Manhattan Island, and centering about the comfortable farmhouse on the hill. Today, this old homestead surrounded by big apartment buildings looks a tiny thing, and quite out of place in the city's development. To preserve this relic of olden times against the growing city that has laid hold of Broadway and 204th Street, Mr and Mrs John H Judge, the owners, presented it with its surrounding grounds to New York, and during the past year the house has been completely restored, fitted with most of its original furniture, and opened to the public as a museum.

During the Revolution, William Dyckman and his family found it prudent to pick up their belongings and move to Peekskill, for their own homestead was too much in the thick of the fighting. The father was beyond military age but the four sons were in the Continental army and were noted for distinguished service. When the war ended the Dyckmans returned to find their home burned to the ground and the place in ruins. Then came the building of the present house, about 1783. Much of the original furniture, china, even cooking utensils, letters and papers were kept in different branches of the family, even though parts of the land and later the house itself were sold. By gifts from the present generation these heirlooms have in large measure been returned and the house today is almost exactly as it was more than a hundred years ago.

A Dyckman Interior

A wide hall stretches down the middle of the cottage, its big outer doors divided into two parts in true Dutch fashion, affording ample ventilation but an effectual barrier to chickens and children. In the hall stands a grandfather's clock facing the stairs that climb rather straightly up, while overhead hangs a lantern with its yellow tallow candle.

The parlors open at the right. Here one finds a fine square room whose big fireplace takes up almost an entire side. The mantels are of simple design, with only a narrow band of fluting for ornament. One of the questions that came up in restoring the house was how to light it so that it would be in keeping with old customs, yet be practical for museum purposes. The solution is seen in the old candles on the mantel which, still in their silver holders, have been threaded with concealed wires, the light appearing only as a formalized flame. Unless one looks closely, the fact that they are electrically lighted will pass unnoticed. This idea has been carried out throughout the house from basement kitchen to the candle that stands beside old Isaac Dyckman's reading chair in the study. However, electricity is the only modern feature that has been introduced in making the restoration.

Just what the little back parlor was used for is uncertain, but it is now a museum of Dyckman relics. Here is the family Bible with its records, the first being the entry of William Dyckman's birth in 1725. It is a marvelous big book with wooden binding encased in pigskin, heavy brass clasps and corners, and copper plate illustrations. Here too is a set of hand-painted china, picturing foreign places that had been visited by the family and for which the bill of something more than five hundred dollars still exists. On a yellow scrap of paper in the fine hand of the day there is exhibited also a bill from Josiah Wedgwood for some blue and white cameos.

Photographic Bureau of The New York Edison Company

Where Hearty Meals to satisfy good Dutch Appetites were cooked

Opposite, across the hall, is a corresponding small room reached by a tiny passageway, three steps up, and then three steps down again. This, it is said, was William Dyckman's room. Now it contains the Reginald Pelham Bolton collection of objects of historical interest found in the neighborhood. These were dug up on the site of the Revolutionary camp near by, or found in old houses. There are knives and forks, buttons from the coats of British officers, and all sorts of pottery and glass fragments. In showing these articles in their cases, side electric lighting has been used so that the lamps are invisible, while the best possible reflection is thrown on the exhibits.

These two rooms are the only ones that are fitted up with cases and set exhibits — museum fashion. The dining room is just as it was when William Dyckman and his big family sat down to dinner there. The table is an eight legged affair, capable of being ex-

Photographic Bureau of The New York Edison Company

The One Large Bedroom of the House

tended indefinitely to make room for all the big and little Dyckmans who came for holidays. Chairs of heavy mahogany and a large sideboard almost fill up the room.

In wintertime the meals were prepared in the kitchen directly underneath, which, as the house leaned against a rocky hillside, was really a cellar hewn out of stone. A large flat rock still floors part of the room. The brick fireplace and hearth, enormous affairs, remain just as they were. Huge spits for roasts hang before the grate and the shining brass and copper pots and kettles hanging about suggest all sorts of delectable viands. In the corner are the spinning wheels. In this kitchen the servants and farm hands used to sit in the evenings, after dinner, presided over by some black goddess of the cook stove. First it was Hannah, whose name has come down as a tradition in Dyckman annals. She was born on the place, the daughter of a slave.

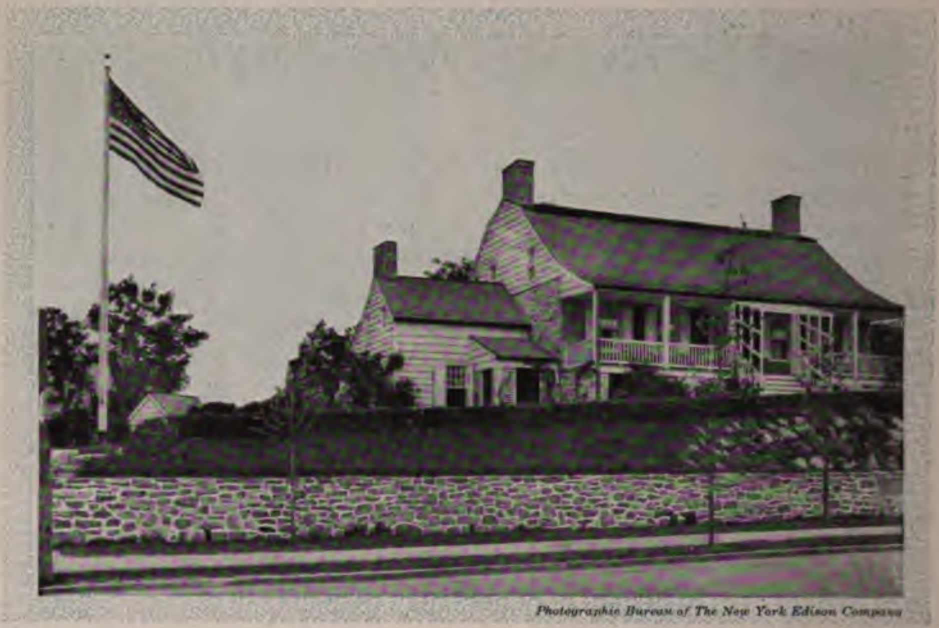
"Tradition describes her," goes the story, "with bright-colored headgear, face black as ebony, temper decidedly irregular, and a strong leaning toward a corncob pipe."

Hannah's cooking was largely done in what was known as the summer kitchen. This was a small addition which did not open directly into the house. This kitchen has an interesting fireplace of even older style than the winter one, its Dutch bake ovens, deep and roomy, extending beyond the walls of the house like stone buttresses. Above was Hannah's bedroom.

Like all of these old Dutch houses the greatest room is on the ground floor. The upstairs space is small and restricted by sloping roofs. The Dyckman house has but two fair-size bedrooms and two small ones. One of these can be entered only from the large bedroom, and was evidently used by the children. Canopied beds, mahogany dressers and stiff straight backed chairs speak plainly of the rigors of the life. The Dyckmans were as comfortable as money could make them, but still that could not do away with some of the hardships. Feather beds were soft, but chambers were cold and nightcaps and warming pans were necessary. Often these nightcaps were very fancy with ruffles and frills of finest embroidery.

Photographic Bureau of The New York Edison Company

Type of Log Hut used by British Soldiers during the Revolution



Photographic Bureau of The New York Edison Company

It was on this Broad Veranda that Old William Dyckman Puffed his Long, Dutch Pipe

The children wore them—and even the babies in their boxlike cradles. Some of these caps, displayed in the glass cases, and protected from inquisitive fingers, make up an interesting feature of the Dyckman collection.

At the end of the upstairs hall is a queer dark room that must have been used for storing things, or perhaps for a nurse or servant in time of sickness. Out of it at the back run low passages under the eaves, which are lighted by small bull's eyes at either end of the house. The passages are very small for storage spaces, yet that seems to be the only thing they could have been used for, except for the children to play hide-and-seek in. The big attic was fine for that too, on rainy days. It has splendid mysterious cubby holes and hiding places behind the chimneys. Here were stored the odds and ends not in use—the riff-raff that even a thrifty Dutch family accumulates and hesitates to throw away, though it may never use them again.

Outside in the garden has been reproduced a log and stone hut, such as the soldiers built for their winter quarters during the Revolution—in fact, this hut was made of materials taken from the originals on the hillside toward the Hudson. For a number of years Mr Bolton has been excavating in the neighborhood, unearthing many treasures of historical interest. He has personally superintended the reconstruction of his hut, and vouches for its historical accuracy. Here again, the electric light is the only modern touch. The Dyckman House, Park and Museum, is in fact a charming remembrance of New York's early days, when Dyckman Street meant more than a subway stop.

Electricity in War Nursing

THE capital of a great nation in wartime! The thought spurs the most inactive imagination. Soldiers are everywhere; raw recruits, seasoned campaigners, the lame and the blind. The shouting and wild excitement of the early days have passed. War is a hard business, a sober business; the business of every man, woman and child.

Women have taken the places of men on the trains, on the street cars, on the busses; in the restaurants in the fields, in the factories. They are working as they never worked before; as they never had or hoped to work. But their supreme effort is in the hospitals, behind the lines and back at home. Here the rigors of the campaign are softened and much of the havoc is repaired.

The Great War has seen many startling changes in campaign methods, most of which are to be marked on the destructive side. No small advances are to be placed to the other account, however, but these, naturally enough, have received small popular consideration in the swift march of events.

It has been estimated that great as has been the destruction of human life during the two years just passed, it has been less in comparison with the actual number of belligerents than in any previous war in history. This is undoubtedly due to the advances which science has made in camp sanitation, first aid processes, ambulance corps equipment and hospital methods. All of these are doing their share. And helping, to an extent which few realize, is that recently recuited member in the army of healing science—electricity.

Underwood & Underwood

An Electric Heat Treatment for Affected Joints. St Thomas' Hospital, London

Every day at about six o'clock the hospital trains arrive in London, and from the Charing Cross Station the wounded are distributed to the city's hospitals. The hospital trains themselves, which run from Dover, have been fully fitted up to handle pressing cases, and a vital part of their equipment, which is in constant use, is the X-ray.

Underwood & Underwood

Treatment of Shell Deafened Soldiers by Means of a Graduated Sound Wire Actuated by Electric Current

In the Milbank Military Hospital, the chief Military hospital in England, an unusually complete X-ray and Electro-Therapeutic department has been recently installed. At the Milbank Hospital the Schnee System is being used with great success in the treatment of soldiers who have been crippled with rheumatism, neuritis, sciatica and similar afflictions as a result of long standing up to their waists in trench mud and water.

At Epsom and East Bourne, England, is maintained a massage camp known as the Almeric Paget Massage Camp. Here all forms of mechanical devices have been gathered which could by any stretch of the imagination be of service to convalescing soldiers. Among those which have proved well worth while is a mechanical horse, operated by an electric motor, which provides a general vibration throughout the entire body. Mechanical massage is also provided for the abdomen and the back by means of a couch which, under adjustable pressure, is moved back and forth parallel to the spine while the patient is held rigid by means of braces.

Soldiers whose nerves have been affected are treated with artificial sunlight and the cheerful and invigorating effect of these electric rays on the human body has done more to increase the flow of blood in the arteries, and hence bring back a normal condition, than any other method of treatment. In four of the largest hospitals in London—Guy's, St Bartholomew's, Milbank and Middlesex—the radiant light and the electric bath cabinet are extensively used and with unfailing good effects.

In almost all of the hospitals of London the value of the Electric Cardiograph is recognized, and each hospital has a complete equipment for recording the action of the heart.

An invention which is generally used for surgical cases consists of a coil, charged with an alternating current, which sets up an induced current in any fragments of metal in its immediate neighborhood, throwing them into a state of vibration. In locating bullets this has been extremely useful, for the surgeons feel the vibration of the metal. If the metal is imbedded in a small bone the entire bone vibrates with it. The device is called the Bergonie Electro Vibreur Localizer. At L'Hôpital Grand le Brun at Bordeaux some wonderful work is being done with this device as also with the Mackenzie Davison Localizer for the eye.

Blind soldiers in the London Hospitals have been given instructions in the use of massage implements and some of them have become adept in treatment of the wounded. The classes have been attended with a great deal of success.

In the Middlesex Hospital the ultra violet light is used for reducing blood pressure by the Bach System of General Radiation. Diathermy is also used in some of the large hospitals, and St Bartholomew's and Guy's do an enormous amount of X-ray work in its various phases.

These are but a few of the most noteworthy applications of electricity in some of the military hospitals. New developments are constantly being made and almost from day to day methods of treatment are changed. Spurred on by the necessities of the war a vast contribution is being made to medical science, a contribution which will have far reaching effects long after the war itself is over.

Underwood & Underwood

A Daily Scene at Charing Cross. The Transfer of the Wounded from the Trains to the Military Hospital Ambulances

Where Water Works

THE fame of the baths of Rome has lived through twenty centuries. Rome's Emperors, the nobility and the populace were proud of these structures of marble, and justly so, for they were wonderful creations. So much for the fame that was Rome's. The question arises, will the fame of New York's Baths be as enduring? Will they find their place in history and twenty centuries hence will another people unearth great blocks of brick and mortar, or slabs of steel and concrete, and exclaim, "Ah, a portion of the once famous Baths of Gotham?"

It is doubtful. Indeed it is highly improbable, and yet New York's baths are worthy of such undying fame, for viewed from almost every angle, except perhaps that of pure extravagance, the baths of Manhattan are superior to those of two thousand years ago. Thirteen of these structures dedicated to the amusement and recreation as well as the health of the people of Manhattan have been erected and are being maintained by the City. In each instance they are located in the most thickly populated sections of the community, for it is the dwellers in these districts who find the most enjoyment in the pleasures afforded by these well appointed buildings.

Photographic Bureau of The New York Edison Company

This Bath in the Heart of the Cherry Street Tenement District is the Centre of Recreation for the Neighborhood

How important an adjunct of city life are these institutions can be gathered from the fact that several million dollars have been spent in constructing and equipping the baths alone and more than a quarter of a million dollars is spent annually to maintain and operate them. This, however, does not seem such an enormous sum when it is considered that nearly six million people availed themselves of these centres of recreation during

Photographic Bureau of The New York Edison Company

Rows of Shower-rooms in the Cherry Street Bath

the past year, and from all indications these figures will be increased by another million during the current year.

The growth and development of the city baths during the past few decades is interesting. The first baths were instituted primarily as a bathing centre and to those desiring to use them they presented the not especially attractive equipment of a number of shower-rooms only. But even these proved to be of conspicuous interest to the population of certain sections and it was not long before the baths gave indications of becoming social centres, as well as filling a great municipal need.

This idea was seized upon immediately by the city authorities and efforts were made to develop these social centres into something worth while. Accordingly larger and more pretentious buildings were planned, having not only compartments for shower baths but a swimming pool as well. This innovation was only the beginning of the development of the idea. Soon gymnasiums were added and still later the idea of developing the roofs as playgrounds or as outdoor class rooms for anæmic children was put into effect.

To-day the modern city bath presents an opportunity not only to cleanse the body, but to rebuild body and mind as well and at the same time enjoy a thoroughly congenial period in these very serious undertakings. These are the features that have been closely followed in the establishment of the New York City baths and these are the features which in the end have made the local baths the most successful of any municipal institutions of a similar type.

Although all the buildings vary in architecture and construction details they are all primarily the same so far as arrangement and equipment are concerned. Usually there are three floors and a roof garden and a basement containing the engine room. On the first floor there are two lobbies, one of which is designated for the use of men patrons, while the other provides special accommodations for the women. From each of these sections a door leads directly to the shower-rooms in the rear. Of course in the buildings where there are no pools the number of showers is greater than in the buildings where the pools take up the larger part of the floor space. The shower compartment sections are arranged in what are known as shower bath rooms. Each room is divided into two compartments, one of which is arranged as a dressing room and the other as a bath room with shower head and mixing valve, for regulating the temperature.

In the pool baths there are only a few shower rooms on the first floor and each gallery has an exit leading to the pool. By locking one or the other of these doors the pool can thus be opened exclusively to men or women on alternate days. Showers occupy the entire second floor of the building as a rule and are used by those who are not favorably inclined toward the plunge. These rooms are arranged almost exactly the same as the shower rooms on the first floor.

It is on the third floor that a departure is made from the baths of several years ago. Here is usually located a complete and particularly well appointed gymnasium, including a running track and all the usual apparatus to be found in institutions of this kind. To develop the social side of this phase of the city baths the gymnasiums are under the jurisdiction of a Recreation Committee, and through the efforts of this committee regular athletic meets and classes are held on certain evenings during each week.

In these gymnasiums some notably good athletes have been developed. Indeed the place is looked upon as the athletic club of the neighborhood and it is the gathering place of all ages. And to add to this community and social interest the pool baths are all equipped with roof gardens which are railed in and used as open air playgrounds. In the case of the Carmine Street bath, class rooms have been established on the roof which are devoted to the use of anaemic children. These roof

Photographic Bureau of The New York Edison Company

The Bath in East Twenty-third Street is one of the Best Appointed and Incidentally one of the Most Popular in Manhattan

Photographic Bureau of The New York Edison Company

This Big Pool Proves one of the Most Attractive Features of the East Twenty-third Street Bath

gardens and class rooms are illuminated at night and afford recreation centres at all times.

Dedicated to the doctrine of health through cleanliness, the utmost care is exercised in keeping the buildings themselves clean. The stone floors and tiled partitions are flushed at regular intervals, and the water in the plunge is changing constantly. Needless to say, in a place where water is the principal element, pumps form one of the most important parts of the mechanical equipment. These pumps are all electrically operated and they draw the water from artesian wells to supply both the pool and the showers.

Of course particular care is exercised in the matter of keeping the water in the pools fresh and clear and absolutely free from dirt and bacteria, which would be apt to transmit disease to the bathers. This is done by an elaborate filtration system, through which the water is continually passing. The water is drawn from the deeper end of the pool by means of a pipe system and pumps and is carried to the filtration plant, which is usually located in the basement of the building. Here it is forced through large sand and quartz filtering tanks. The water is then returned to the opposite end of the pool, but during its progress back to the big swimming tank it passes through other forms of treatment in which crystal alum is the principal agent. This cleanses it by coagulating with and precipitating impurities or suspended matter which has escaped the filtering tanks. Just before re-entering the tank again it is also treated with hypochloride of lime for disinfecting purposes. As a result of this circulating system of filtering it is possible to use the same water over and over again for several days instead of emptying the pool every second day, as was formerly done when filtering methods were not used. Changing temperatures is regulated automatically by a temperature control system, so that in spite of the fact that the water is constantly flowing in and out of the pool the same degree of heat is always maintained.

Many of the baths are supplied with current by The New York Edison Company, service being used not only for pumps and filtration plant, but also for lighting, and various other applications throughout the buildings.

Manufacturers and Agents (Continued)

Motors

General Uses

Allis-Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
Russell & Co—56 W 45th St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St
Ward Leonard Electric Co—Mount Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Madison Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St

Refrigeration

Automatic Refrigerating Co—50 East 42d St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Madison Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

B & B Sign Company—347 Fifth Ave
Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—649 W 43d St
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Snow & Co—531 W 46th St
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St
Wertheimer Sign Co—558 W 36th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—511 W 42d St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro-Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 Broadway
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Shelton Electric Co—30 E 42d St
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
Ward Leonard Electric Co—Mount Vernon N Y
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—35 Vestry St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Avenue
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Innovation Electric Co—585 Hudson St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker James—119-121 Lafayette St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Electric Company—463 West St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cataract—46 E 41st St
Home Devices Corp (Modern)—Bush Terminal Brooklyn
Hurley Machine Co—147-157 W 42d St
Kandem Electric Co Inc—49 E 21st
National Sewing Machine Co—290 Broadway
Sibley-Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Electric Co—105 W 40th St

Welders

Welding Materials Co—114 Liberty St
Westinghouse Electric & Mfg Co—165 Broadway
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768— The Lincoln Electric & Repair Shop
Amsterdam Ave 1989 — Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Cons Co
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Canal St 313—Oneida Electric Co
Canal St 417—C & E Engineering Co
Canal St 417—The Maintenance Co
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Fifth Ave 75—H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Ninth Ave 670—H Lauer & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 819—Thomas Hindley & Son
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Elec Co
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Elec Cont Co
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Elec Construction Co
West 31st St 109—Jandous Elec Equip Co Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—N Y Elec Installation Co
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 56—Russell & Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Mfg Co

East of Broadway and Fifth Avenue

Beekman St 74—Jordan Bros Const Co
Bible House 78—Thos C Miller
Beaver St 42—Hanover Elect Co
Broome St 114—B H Weinberg
Broome St 434—The Globe Electric Contracting & Repairing Company
Cedar St 16—Wm Truswell & Son
Dover St 8—Hazazer Electric Co Inc
East Houston St 93—I Berkowitz
East 3d St 48—B Ackerman Co
East 3d St 136—H A Schreiber
East 8th St 4—J M Smith & Son
East 8th St 48—American Pressing Iron Co
East 15th St 6—Geo D Beinert Inc
East 15th St 416—Frank Bloom
East 21st St 22—The Shultz Electric Co

Department Stores which Sell Electric Appliances

Adams-Flanigan Co—Westchester & Third Ave Bronx Basement
Barnett Bros—Columbus Ave & 74th St Basement
*Bloomingdale Bros—59th St & Third Ave Basement
John Daniell Sons—759 Broadway Basement
*Gimbel Bros—6th Ave & 33d St Fifth Floor
*J B Greenhut & Co—6th Ave & 18th St Basement
H C F Koch & Co—132 W 125th St Basement
Lewis & Conger—Sixth Ave & 45th St First Floor
Liggett-Riker-Hegeman Drug Stores
*Lord & Taylor—5th Ave & 38th St Fifth Floor
*James McCreery—5 W 34th St Sixth Floor
*R H Macy & Co—Broadway & 35th St Basement
Rothenberg & Co—34 W 14th St Basement
Stern Bros—41 W 42d St Fourth Floor
*John Wanamaker—Broadway & 10th St Seventh Floor

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*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 West 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Brooklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Clarence L Smith Co Agents)—544 W 30th St (C)
Cowan Truck Co—114 Liberty St (I)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey Street Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent)—236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—Mt Vernon N Y (C)

Charging Apparatus

Cutler-Hammer Mfg Co—50 Church St
Eck Dynamo & Motor Co—Belleville N J
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Lincoln Electric Co—149 Broadway
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Cutler-Hammer Mfg Co—50 Church St
Eck Dynamo & Motor Co—Belleville N J
Edison Thomas A Inc—141 Lakeside Ave Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Lincoln Electric Co—149 Broadway
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Manufacturing Co—165 Broadway

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—2 West End Ave and 64th St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42 St
Phila Storage Battery Co—American Building Broadway and 58th St
Storage Battery Supply Co—239 East 27th St

Manufacturers and Agents (Continued)

Mechanical and Battery Parts (Concluded)

Walker Vehicle Co—531 W 46th St
Willard Storage Bat Co The—228-30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric—Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303-305 Fifth Avenue
Hospital Supply Co The—53-55 Fifth Avenue
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Ave
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Broadway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—35 Vestry St
Neel-Armstrong Co—29 W 34th St
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 Eighth Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—Fifth Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 E 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 W 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 B'way
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumbwaiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 W Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
National Elevator Co—62-64 W 45th St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
American Blower Co—141 Broadway
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St
Curtis Pneumatic Machinery Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—649 W 43d St
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Gerdes Theo R N—123 Liberty St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—649 W 43rd St
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
Kandem Electric Co Inc—49 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St
Western Elec Co—463 West St and 105 W 40th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 B'way

Globes—Reflectors

Dealing William—1 Hudson St
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42d St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Harry Pickhardt—98 Park Place
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—649 W 43d St
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialites Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 105 W 40th St
Wicks Electric Co—Cleveland Ohio
Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Low Voltage Direct Current Bell Ringers

U S E M Co—301 West 37th St

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St
Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Spring 9890
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
124 W 42d St	Bryant 5262
151 East 86th St	Lenox 7780
27 East 125th St	Harlem 4020
362 East 149th St	Melrose 9900

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Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Spring 9890—includes the territory south of Christopher and Eighth Sts, west of the Bowery and south of Catharine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street, east of and including the Bowery, and north of and including Catharine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

Varick and North Moore Streets

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The Edison Monthly
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N F Brady, President
Joseph Williams, Treasurer
Lewis B Gawtry, Secretary

It sometimes becomes rather irritating to us Americans so constantly to be assured that "they do that much better on the other side." Yet truth compels us to admit that the stricture is frequently just, especially in certain domains of the arts and crafts. One of these is stage-lighting—fascinating, perplexing study that it is, neither wholly art, nor science, nor trade, but a mixture of all three. But backward as this country has been, unmistakable indications are at hand that America in the future will have some interesting contributions to make on this subject, and of a sort characteristically American.

◆

"Curious," one exclaims almost involuntarily, "that Yankees, a race of most ingenious mechanics, should be found lacking in a craft apparently so dependent on ingenuity of mechanism, especially since electricity has become the accepted illuminating medium of the theatre." To which the European will rejoin that the fault has lain, not with our apparatus, but with our theories of stage-lighting.

The answer to the riddle is that until very recently, Europe has taken its serious drama more seriously. The art of stage-illumination abroad has been developed for the most part in connection with the endowed theatre, subsidized either by the state or under royal or quasi-royal patronage. Productions in these theatres took on more the shape of an artistic than a financial venture and consequently the lighting methods formulated were subjected to much closer scrutiny as to their esthetic value. Thus one can explain the backwardness of America in this form of stage-craft.

Within the past few years, however, various influences have been working toward betterment. The aims and accomplishments of this movement are briefly sketched in this issue of The Edison Monthly.

◆

The trend toward modern methods in household management, leading as it naturally does to the general use of electrical devices of all kinds, has brought about a new requirement in home design and one which is now beginning to receive the serious attention of architects and builders. Reference is made to the requirement for additional electrical outlets in the various rooms.

◆

A few years ago when an iron was perhaps the only piece of electrical apparatus in the home, the kitchen lamp socket was usually sufficient. Today when every well ordered household numbers in its equipment a vacuum cleaner and an iron, appliances for cooking at the table and medical apparatus, while the more pretentious households include laundry equipment, kitchen power sets and perhaps a refrigerator, the former makeshift method is decidedly ineffective. Special outlets must be available in the rooms where the devices are to be used.

The house hunter finds the lack of facilities for the use of such apparatus a most decided objection to otherwise attractive homes, while tenants in inadequately wired dwellings and apartments are asking that extra outlets be installed.

The demand of tenants is for more outlets. Forehanded building owners and managers are taking steps to meet the demand.

◆

During the past year the adoption of Central Station service in New York has resulted in the closing down of no less than twenty-five private generating plants. Building managements, convinced that the operation of electric generating equipment on their premises possessed many bad features, resorted to the only logical solution of the problem.

For many years now The New York Edison Company has been instrumental in the closing down of such plants and the reduction of the economic waste that is inevitable when energies are directed in a small way to tasks that could be better handled by specialists.

◆

It is not the purpose of The Edison Monthly to attempt here a discussion of the Central Station-Private Plant question. Such a discussion would naturally have to confine itself to broad general principles. Feeling that concrete examples would be of greater interest, representatives of this magazine have interviewed several building managements which, after a previous private plant experience, are now using the service of the Central Station. Without exception those in charge of the buildings declared that the service received from the lighting company more than fulfilled the promises of the Central Station representatives who were instrumental in bringing the change about. These testimonials, if they may be called such, are published elsewhere in this issue.

It will be noted that in every instance the experience with Central Station service covers a period of several years—two years being the shortest term, while in one case the endorsement is based on an experience of fifteen years.

◆

An apartment hotel, a loft building, a skyscraper, a printing establishment, a church and great newspapers are among those who after having tried Central Station service speak in its favor. Here is a group of buildings presenting a range of requirements running all the way from an organ motor and auditorium lights, which are seldom used more than a few nights a week, to the motors of the mighty presses of a great Metropolitan daily which operate almost ceaselessly. In every case current from the Central Station has more than met the requirements. Such words coming from such sources are to be depended upon. They merit the careful consideration of those who may now be experiencing the vicissitudes of the private generating plant.

Central Station Service Endorsed
by
Former Plant Operators

THERE are a number of ways of getting at facts concerning a commodity. One may read the advertisements with greater or less reserve; he may listen to arguments by convincing solicitors; he may even go to the length of trying the thing. In certain cases and without resorting to actual trial, he may learn of the experience of others now using the goods. One indeed can hardly do better than "read the testimonials," especially when the testifiers are fellow-townsmen and easily reached.

While Edison Service has always regarded itself in the self-evident class, that most human demand "to be shown" has called for proof of its superiority by various means. The following "vouchers" by former private plant users should prove of exceptional interest to building managements still contriving to get along with their own generating equipments.

If long and tried experience counts for anything, that of P F Collier and Son, Inc, should impress any big building interest skeptical regarding Central Station claims. It was fifteen years ago that this great Thirteenth Street publishing establishment became dissatisfied with its self-supply of electricity. It appeared to be costing too much and its capacity in the event of any unusual demand was necessarily limited. After looking into possible solutions of the difficulty, the management arranged with the Central Station for a year's trial. During this period, which represented a complete round of printing-house events, the new supply was thoroughly tested and it in

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"The New York World" finds Edison Supply of "the Greatest Economy" every way more than met requirements. The result, at the close of the twelve months, was a new contract which has been in force since that time.

The Company's manager of buildings, Mr F E Wilder, stated recently that from his standpoint one great value of Edison Service was complete relief from electrical worry. "You people have all that worry," he remarked, "and I have my time and energy for other matters. Another thing we like about your supply is its limitless capacity. If we want more power, instead of having to spend $20,000 for a new engine, all we have to do is to turn on more current or, in special cases, notify you of our increased requirements. I have nothing but good to say of Edison Service and the personal service and courtesy of your representatives."

The installation of Edison Service in the former American Tract Society Building at Nassau Street and Park Row reveals in a striking manner the necessity of such supply. Until its acquirement by The New York Life Insurance Company the property had been served by a large private plant. Coincident with the change in ownership *The New York Sun* signified its readiness to lease a considerable part of the property for a long term. But on one condition. That condition was that the plant be removed and Edison Service substituted and that the hydraulic elevators be replaced by the electric overhead traction type. Mr William C Reick, of *The Sun*, recently stated the case as outlined, adding that the use of Central Station supply in the famous old red brick building had long since convinced *The Sun* management of the need of such dependable service for the very exacting requirements of a newspaper establishment.

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"The Sun" Building, the Lease of which Depended on the Installation of Edison Service

Some time before this, Fifth Avenue was treated to a similar spectacle in the case of the Knabe Building. This handsome twelve-story structure, devoted to offices and the manufacture of small wares, required electric light and motor power, and had provided itself with such by means of a private generating plant. However, the subsequent discovery of tungsten and its application to the incandescent lamp soon made it possible to purchase current for a building of this size for about one-half of what it was then costing. The plant was forthwith closed down and Edison Service introduced. This was in February, 1911. During an interview a few weeks since, the manager, Mr N J Mitchell, asserted that central station supply had proved from the beginning as satisfactory as anticipated and invariably reliable. Its usefulness of late has been found in the overtime service required by numbers of the tenants. Under the old supply, the cost of meeting this demand would have been quite out of proportion.

One of the earlier examples of a change to street supply on the part of an uptown hotel was a contract with Stratford House in 1913. A year before this the management had decided to adopt Edison Service temporarily. But when at the expiration of the interval agreed upon everything was in readiness to go back to the former supply, there was distinct objection. The saving effected during the trial period, the doing away with the annoying vibration of an engine, and the distinctly superior light supplied, were points which finally resulted in a decision in favor of permanent street service. The present management of the hotel has inherited its Edison Service from the old management that contracted for it, and on leaving, recommended its continuance as in every way dependable and justifiable.

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The Knabe Building which Economy led to Adopt Edison Supply

Churches as a usual thing have responsibilities enough without incurring that of a private plant. However, St. Paul's at Eighty-sixth Street and West End Avenue did make the attempt. Both the big church and the rectory adjoining were to be supplied from a plant in the church basement. The supply was actually forthcoming and was said to be satisfactory in quality and quantity, when dissatisfaction set in. The plant was costing a fortune to operate, and the sexton, an engineer of no mean ability, was amply convinced of the waste of the arrangement. With the introduction of Central

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A Hotel Induced to use Edison Service after a Year's Trial

Station current the old quality and fulness were maintained and the hope of a cheaper supply was fully met. The pastor, Dr C L Goodell, when asked recently regarding the service, spoke highly of it in every way, and being of a musical turn, remarked on the superior operation of the organ by Edison current.

For twelve years a private electric plant supplied the needs of the Young Building, the well known loft structure at 605 Broadway. At the end of this period the concern with characteristic acumen concluded that, however called for the plant might have been when installed, its usefulness had been removed by the existing central station rates. The change to Edison service was made in August, 1911, and the building's elevators, pumps, and hundreds of lamps have since been supplied from this source. Mr Fecheimer, in charge of the property, condemned vigorously the use of a plant in his building, on pure grounds of economy. If any doubt remained of his attachment for Edison Service it was removed by the assurance that he was always glad of the chance to say a word in its praise.

The conspicuous instance of the adoption of Edison Service by *The New York World* nine years ago cannot be better commented upon than by quoting from a recent address by that journal's managing editor, Mr Don C Seitz.

"Our shop," said Mr Seitz, "was the first to adopt electricity for motive power in all departments. We had about 1,800 horsepower in a steam plant in one corner of the building, with boilers threatening to blow up at any time and a combination of bad coal and striking firemen. We were induced finally to put in a breakdown service. This was hooked onto the presses, and to the astonishment of everybody, they ran more steadily and broke less paper than when driven by the steam plant. Eight years ago we decided to throw out the boilers and engines. Mr. Pulitzer endorsed the movement, but was rather inclined to be skeptical and insisted that I keep the engines in the building. This I did, but I took out all boilers and steam connections. I finally paid a man $1,500 to please take the engines away! I had made the discovery, which still prevails, namely, that it was impossible for us to make current cheaper than The Edison Company could sell it to us on its very moderate scale. It was and is possible for us to use Edison current with the greatest economy.

"It is interesting to note that in our legion of motors, the first burn-out occurred eight weeks ago, due to an overworked armature in the elevator shaft, and that during all these years we have never had a shortage of current. The tireless supply from Waterside Station is always on hand—we press the button and Edison does the rest. That, I think, is a marvelous record of efficiency."

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The Plant of P F Collier and Son, Inc, a Fifteen-Year User of Central Station Service

Apartment houses, theatres, and hospitals might be mentioned, if space permitted, as having adopted and continued with Central Station Service under similar circumstances. In every instance alluded to the extravagance of private supply was shown at the time of the transfer of service and has been consistently shown through demands of all sorts. In every instance spoken of, the dependability of central station current has proved a grateful relief after the breakdowns and other interruptions inevitable in the running of a small plant. Finally, in every one of these instances, the supply of current from the great generators of the Central Station has done away with the noise, odor, and vibration without which no building plant can be run.

The managements referred to represent the private plant problem in its varying phases and in its one and only solution. They have tried making their own current and have abandoned the idea simply because Edison Service has shown itself cheaper, absolutely dependable, and free from engine room nuisance. Such "vouchers" are not advertising and are not soliciting. They are *experience*, pure and simple.

Closed circuit, constant current welding described in the February issue of The Edison Monthly is the process of the Arc Welding Machine Company. The generator set pictured on the same page is that of the Arc Welding Company and not a Wilson generator.

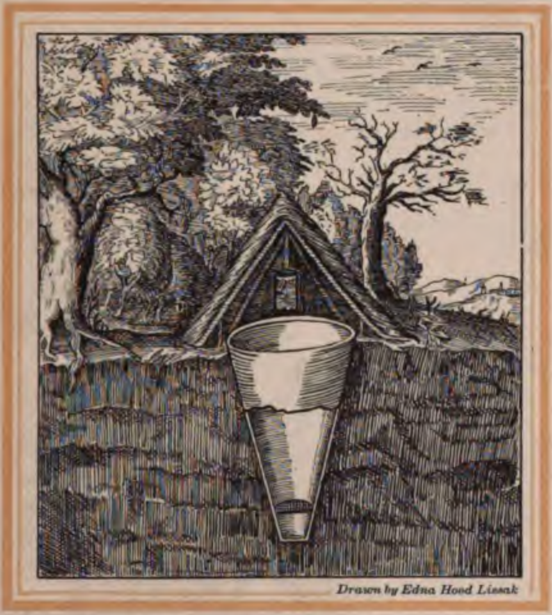
History on Ice

WHILE there is no record of the Eskimos being driven to artificial cooling devices, with this exception nations and peoples of all times have sought off-seasonable means of chilling food stuffs. Manuscripts, not tradition, relate that ice was preserved for domestic use even in the days of Nero, who built ice houses at various points along the Tiber.

More modern in spirit is a strictly scientific expedient hit upon by the Bengalese long before the writing of history became recognized. This method, still employed, provides for the freezing of water in shallow, porous, earthen dishes resting on such non-conducting material as straw or grass and exposed to currents of night air. Though the temperature of these currents is above thirty-two degrees, freezing is explained by the rapid emission of heat from the ground surface. Clear nights are the most favorable. Enclosures are formed four or five feet wide with four-inch walls within which the vessels lie some distance apart. Dew forms to greater or less extent during the whole of the nights best adapted for this ingenious undertaking.

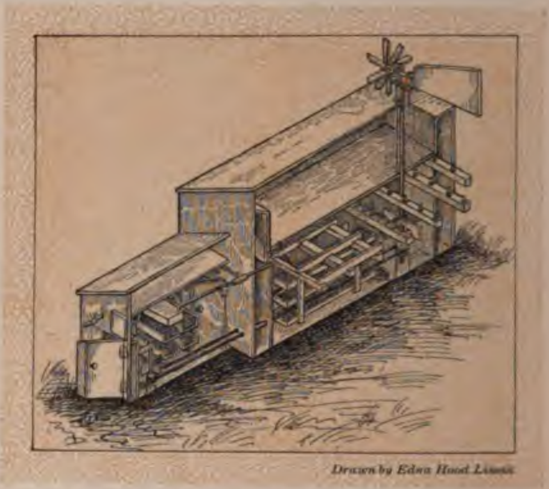
The same principle is in force among the nomads of the desert where the night drop in temperature is a penetrating surprise to tourists possessed of the "burning sands" idea. Immersing in wells or running water, a recourse still common throughout our own farming districts, is as old as the streams themselves and no doubt will continue as long as these gratuitous coolers remain in business. The bringing down of mountain snows to allay the heat of imperial palates has been a privileged usage among the Orientals from days immemorial. Witness the chivalric and, alas, "picturesque" incident of the Crusades wherein Saladin made his grateful present of snows from the distant Caucasus to the sick Coeur de Lion.

Aside from the authentic record it is thought, and


Drawn by Edna Hood Lissak

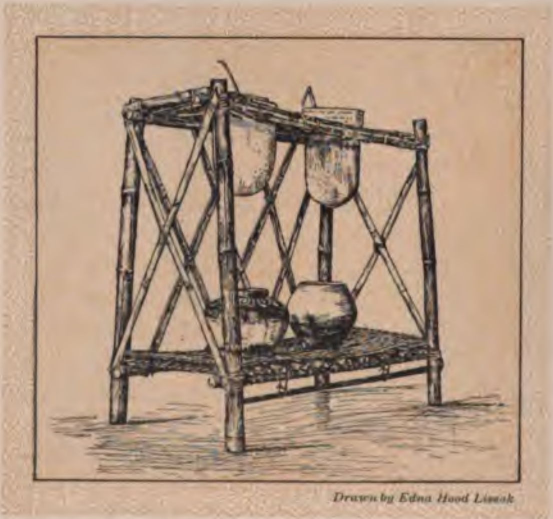
A Sixteenth-Century Snow Pit Containing Alternate Layers of Beaten Snow and Straw

with considerable reason, that these resourceful Old-Worldings had knowledge of genuine artificial processes such as freezing mixtures of divers kinds. Inquiry has shown that in certain lines the mechanical genius of the ancients was fully as active as that of today. That so much besides Rome should have succumbed with the Empire must remain the lasting regret of those given to tracing the development of modern methods.


Drawn by Edna Hood Lissak

A Plan for a Refrigeration System Worked Out in 1861. Note the Windmill for Supplying Fresh Air

However, interest in artificial refrigeration was revived three centuries ago. The idea was worked at in 1607 and later by Fahrenheit in 1762. As early as 1626 Lord Bacon, believed to have passed away prosaically in bed, in fact died a martyr to the revival of refrigerating science. His lordship died of pneumonia, it is true, but pneumonia resulting from a cold caught while stuffing a chicken with snow. The fatal result of the experiment, so regrettable in itself, put a damper for the time being on further investigation along this line.


Drawn by Edna Hood Lissak

A Water Filter and Cooler in Use by the Visayan Tribesmen of the Philippines

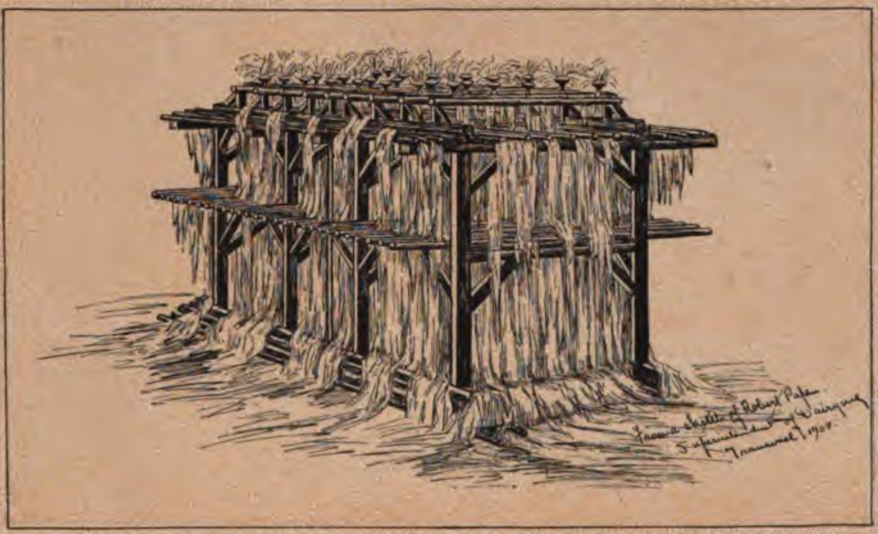
The first attempt at ice preservation took the form of an ice cream cone. That is to say, conical excavations fifty feet deep and twenty-five feet wide at the mouth, constituted snow conservatories lined with closely joined boards. A strong trestle was fixed about a yard from the bottom supporting a wooden grate upon which clean straw was laid. Snow was deposited on this straw and beaten to a hard cake of icy consistency a foot thick. On this was placed a layer of straw again and so on until the pit was filled. So constructed was the grate that the snow melting in due course drained away from the mass. The cover of the pit was double thatched with reed or straw upon a copped frame or roof showing a small door like a dormer.

Practical apparatus for producing cold is much more recent. The first authentic machine was that of Dr Cullen who used the evaporation of water under a vacuum. The invention, put in operation in 1755, presently found itself equalled by that of Lavoisier who experimented successfully with ether. The efforts of both men met with a reception far from genial and survive only in the cheerless record of like accomplishments.

A certain Robert Pope, of recent years Superintendent of Dairying in the Transvaal, introduced among his farmers the Beckman-Koser system of ice making. The device called for a number of outlets emitting five jets of water which fell on a wooden scaffold. The night temperature, which falls under the freezing point, soon forms small icicles that rapidly grow to considerable size. Early in the morning these are broken off by wooden sticks and stored for the day.

Mechanical refrigeration took a workable form in a water and sulphuric acid machine invented by one Leslie in 1810. In 1842 Vallance patented an apparatus in which dry air was circulated over shallow trays of water, the evaporation extracting large quantities of heat.

The original air-refrigerating machine was brought out in 1845 by Dr Gorrie of New Orleans who with Dr Cullen, already mentioned, felt a special need of artificial refrigeration in the aid of his profession. This mechanism had a cylinder in which



Drawn by Edna Hood Lissak

The Beckman-Koser Icicle Maker, a Device in Use in the Transvaal

Drawn by Edna Hood Lissak

Egyptians Preserving Game in Salt, a Recourse Long Antedating Refrigeration Methods

the air was first compressed. It was passed from this cylinder to a chamber cooled by running water where a pressure of fifteen pounds per square inch was maintained above that of the atmosphere. The air was already cooled partly during compression by the injection of water, the cooling chamber receiving in reality a mixture of air and water. This on passing to another cylinder was expanded down to something like atmospheric pressure. While expanding it was mixed with brine injected into the cylinder, the low temperature of the expanding air communicating itself to the brine. The air on leaving this cylinder was allowed to escape to the atmosphere while the brine, now cooled to twenty degrees Fahrenheit, was conveyed into a tank and applied to ice making.

Succeeding Gorrie's achievement there appeared in 1850 the ammonia absorption device of Corre. This was put in commercial use in England nine years later and dissipated all doubts as to the practicability of mechanical refrigeration.

From that time the principles employed have remained essentially the same. Space at present permits only of allusion to such recent developments as the ammonia and carbon dioxide machine operating on the compressor plan, the ammonia absorption system, the dual system of absorption refrigeration, and the low pressure ethyl chloride machine. Admirable in themselves, these devices are indebted no less to the efforts preceding them than to that great contemporary force to which all well intentioned freezing machines look for adequate performance. The fact that these electrically driven refrigerators are many is a natural assumption. A second article will deal with the more prominent of them described in installations of uncommon interest both in general warehouse equipment and in special industries.

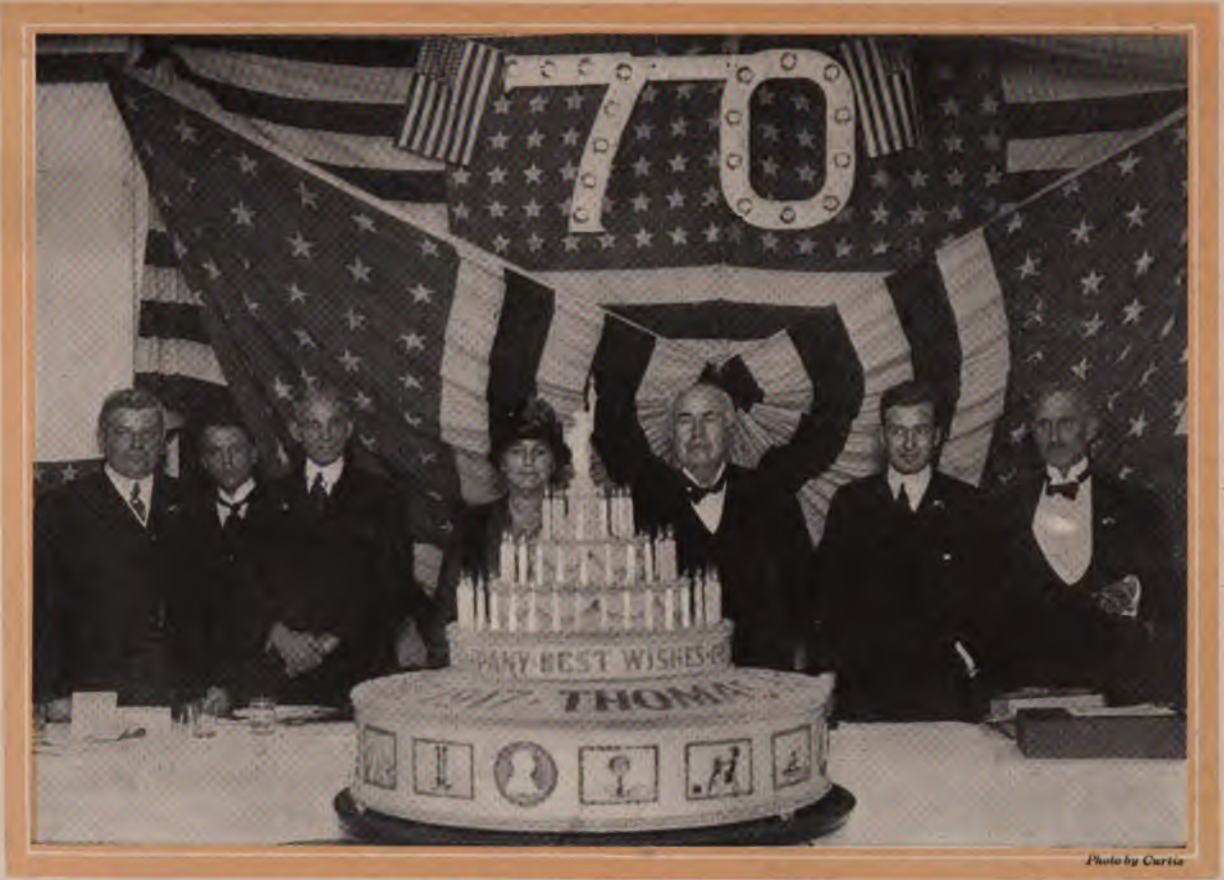


Photo by Curtis

Business Associates and Employees Tendered a Birthday Dinner to Thomas A Edison on his Seventieth Anniversary. A Cake Picturing His Noteworthy Contributions to Science and Industry was Presented by the Staff Council of The New York Edison Company

Fireless Fire-logs

THE glowing log fire of the stage fireplace has added effectiveness to many an interior setting. These same illuminated fire-logs have often enhanced the advertising value of window displays or exhibits in connection with a real or artificial fireplace. The fact that illuminated fire-logs are merely an effect of electric lighting combined with a clever imitation of natural materials has made them easily adaptable also to installation in homes and public buildings, where as a feature of interior decoration they are being increasingly used to fill the fireplaces that once yawned coldly and emptily upon otherwise well appointed rooms.

At the recent Electrical Exposition in the Grand Central Palace, a group of electric fire-logs adorned the hearth in the living-room of the model apartment, and showed themselves suitable to the most luxurious environment. These logs are made by Kliegl Brothers, who have to their credit many excellent stage decorative effects of unusual character. Various designs in illuminated logs suited for all kinds and sizes of fireplaces, both for home and commercial purposes, are also available.

Fire-log Design

The logs are made of metal screen which is covered with asbestos, shaped and painted in imitation of bark, while the metal ends of the logs are painted to represent the grain of the wood where it has been sawed off. A hollow interior gives space for electric lamps in red bulbs—forty watt lamps ordinarily being used. When current is turned on, red light is reflected in gold foil where the logs cross each other; it glows slightly through the translucent portions of the "bark," and plays over the surfaces.

One great group of logs, planned for use in large fireplaces, is suggestive of a splendid country fire. Sometimes the logs are stacked as for a campfire, and in this form are frequently employed by the Campfire Girls and other organizations for demonstrations and exhibits. For old-fashioned fireplaces and designed to rest on massive andirons there is the large single log which appears to have burned through in the middle, forming an ash heap below. This ash heap is made of wire screen, covered with asbestos and painted gray, a red bulb under the screen adding realism to the glowing ashes.

Illuminated coal grates or baskets for open fireplaces are constructed on the same principle as the fire-logs. Iron grates are lined with wire screen and filled with pieces of colored glass, on the top of which is sprinkled a small amount of real coal, a red bulb beneath the glass causing the bright and cheerful glow.

While the electrical "fire" is not primarily designed to give the illusion of heat, there is a distinct impression of warmth; and real heat, if desired, can be supplied to both types of fires.

An appearance of flame or smoke from fire-logs is occasionally simulated for stage or special exhibit purposes. Red silk flames, agitated by a concealed electric fan, will lick the logs most realistically, and a very accurate effect is also secured from the illumination of gold foil cut in flame pattern. The semblance of smoke is obtained from an air tank and a chemical box containing ammonia, muriatic acid and a cleansing solution. Air from the tank is pumped through this chemical box, and fumes resembling smoke are conducted up between the logs by a rubber tube.

Photographic Bureau of The New York Edison Company

Electric Fire-logs are Adapted to the Most Luxurious Environment. This is a Large Fireplace Installation in the Morosini Residence at Riverdale, N Y

Away with Brooms and Brushes

You who've borne the tribulation and the dusty inundation
Of the Spring house-cleaning days of long ago
Know that now that dread mundation has been doomed to dissipation,
We have trapped the oft elusive "Witch of Woe."

So away with brooms and brushes and away with mops and slushes,
And away with beating carpets, pulling tacks;
Just a vacuum installation plus electric generation
Chases dirt from all the corners, nooks and cracks.

Hale McBride

The Exide Battery Depot, West End Avenue and Sixty-fourth Street, Offers Accommodations for Sixty Electric Trucks

New Exide Battery Depot

TO meet the growing demand for garage service occasioned by the operation of more than 2,556 electric trucks in Manhattan and Bronx, the Exide Battery Depot has erected a new garage at Sixty-fourth Street and West End Avenue providing complete and up-to-date equipment for repairing and charging. The building accommodates sixty cars. With the two older service stations the Exide Company has facilities to care for approximately one-third the electric trucks in New York. The two other garages are at 141 East Twenty-fifth Street and 527 West Twenty-third Street.

The new structure is of fireproof concrete and brick with a floor space of 30,000 square feet. Sixty charging outlets, an all day and night service with a working staff averaging forty men, and two repair wagons ready to go out on call to any point in Manhattan or Brooklyn, are the features of the new shop.

While the garage houses only electric commercial vehicles, repairing and charging of passenger electrics is done as well as battery charging for the lighting and self-starting systems of gasoline cars. Every facility for this work has been provided. A stock of charged standard batteries is on hand so that the least delay possible is caused in replacements, while the large number of charging lines does away with any waiting for a chance at the board.

Many owners prefer to have their cars housed and taken care of by men whose business it is, rather than to maintain their own private garages. Among those who use the Exide service are Stern Brothers; James McCutcheon; Black, Starr and Frost; Brooks Brothers; Franklin Simon & Co; Maison Blanc; Kurzman; R C Williams; Lichenstein; Cammeyer; Mallory Steamship Co; Pittsburgh Plate Glass Co; Runkel Bros; John Wanamaker; Ward & Gow; Capitol Lunch; Boston Excelsior Co; Geo Fish; H C Wettereau; Nathan Strauss; Steinway & Sons; United Cigar Stores; J & J Slater; Lewandos; Corn Exchange Bank; Z T Piercy; Shoniger Bros; Haas Bros; and H Bendel.

Star Lighting

TO understand why American stage-lighting is what it is, and why refinements used by noted European producers have met with tardy reception here, one must recognize the fact that American stagecraft has had to work out its destiny under entirely different conditions. Abroad, most of the improvements originated in theatres supported by state or rulers. In the United States, however, stage-lighting has been an extremely practical affair. It has not been a question of arranging illumination for one particular stage; equipment here must be ready for transportation from coast to coast, from the finest metropolitan theatre to the "opera house" of the smaller cities. Thus almost of necessity, stage-lighting in America harkened more to mechanics than to theory. But let us not too much regret this practical bent, since it is precisely on that account that America may yet have something to say to Europe on the art of stage-lighting. To point out where one may expect this development is the purpose of this article.

Immediately, two styles of stage-lighting present themselves, that suitable for the spectacle and that designed for the serious play. The ideal of the former is beauty; of the latter, to bring out dramatic values to assist the characters in revealing themselves to the audience. Yet very often a production demands both kinds of treatment, for example in such plays as "Hamlet" and "A Midsummer Night's Dream." It is obvious that lighting processes for the spectacle and the character drama will be distinctly different, but both may proceed on the same principles.

For the most part, up-to-date American practice has been as nearly as possible to simulate the thing itself; the best European practice is to produce, instead, the idea of the thing. Work out these two theories on the subject of moon-light. American craftsmanship would rig up a moon to rise and set as nearly like the real luminary as possible. The other method would omit the moon itself altogether, on the ground that a stage planet could never be made to seem like a real one. The moon-light, however, is another matter. By use of light coming from one side of the

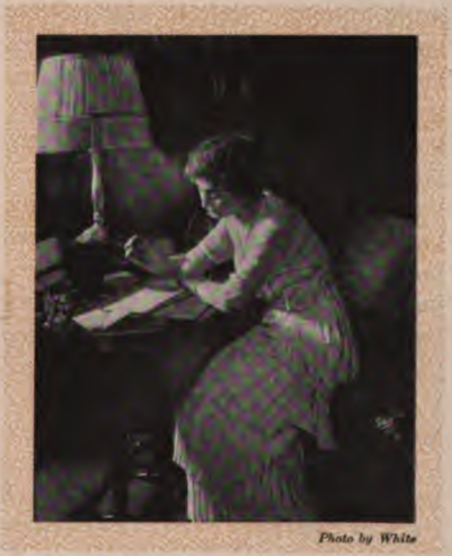


Photo by White

An Electrical Bulb, Sunk in the Desk, Lights up Miss George's Face

Peter Pan Rescues the Ship from the Pirates. A Tableau without Footlights

stage it is quite possible to give the effect of rising and setting, leaving the moon to be supplied by the imagination of the audience.

Thus the European criticism of ordinary American stage-lighting would be, "You attempt the impossible reality and so kill the illusion." This criticism should not be levelled equally at all productions or at all parts of some productions. It is more a statement of general tendencies.

But stage-lighting can never be a matter of theory alone. It must "work." For instance, granted that the stage interior should be as life-like as possible, producing at least the effect of reality, let us take a simple setting, a living-room, lighted from a central chandelier. Now, on the stage, both room and people in it are illumined from the foot-lights. But how can any such arrangement look like the real thing? So the first cry of art was, "Away with the foot-lights; light from above." This done, the result was not art but confusion. The overhead natural illumination threw shadows on the actors' faces making it difficult for the audience to follow their expressions. As the chief object of stage-lighting is to illumine the drama, theory and practice had to compromise; the correct solution was found to be not the abolition of unnatural foot-lights but their modification.

Thus it sometimes happens that basic dramatic truth requires the rejection of surface verity. A E Krows in his "Play Production in America" quotes an interesting example of this in last Winter's revival of Clyde Fitch's "The Truth." At one point, the chief character sits at a desk and writes a letter. It is absolutely essential that the audience should be able to watch the woman's changing expressions. No real desk-lamp of any kind but would throw a shadow just where, dramatically, there must be none. To counteract this, a small electric bulb was sunk in the desk lid. Thus at all points the art of the illuminating engineer must be made to serve the purpose of the play.

Several years ago, various of the more progressive American producers, scenic artists and stars became interested in the improvement of stage-lighting. Whether or not these people were spurred on by European example need not be discussed here; suffice it that the pioneers—acting as individuals and not in an organized body—can already show definite results of their endeavors.

Again, the American experimenters were forced to be practical men. They could not take one theatre and merely perfect its lighting facilities. To be successful their improvements had to meet the requirements of the road—sturdy construction, easy packing, handling, setting up and operation. And it is in designing ways of obtaining simply and inexpensively the same effects as those achieved by the European experts that we may see America's probable contribution to the advance of stage-lighting. Among the people most concerned are Hewlett and Greenley, Belasco, Maude Adams, the Washington Square players and the Society of École des Beaux Arts Architects. In most instances the illuminating engineer has been Mr Bassett Jones, who has made valuable reports on the subject.

One of the first problems approached was that of overhead illumination. The European device of a sky-dome (which obviously cannot be transplanted from one structure to another) was countered by a clever use of nitrogen gas filled lamps. The particular unit hit upon was a 300 or 400 watt lamp placed in special nickel-plated reflectors. Color filters can be attached to these lamps, which when hung up under the "gridiron" produce on dyed canvas and gauze the same effect as the elaborate German sky-dome.

Several of these new spot-lights provided with requisite color-filters furnish a "canned sunset," or more technically speaking, a color-mixing strip. Three hues are employed—red,

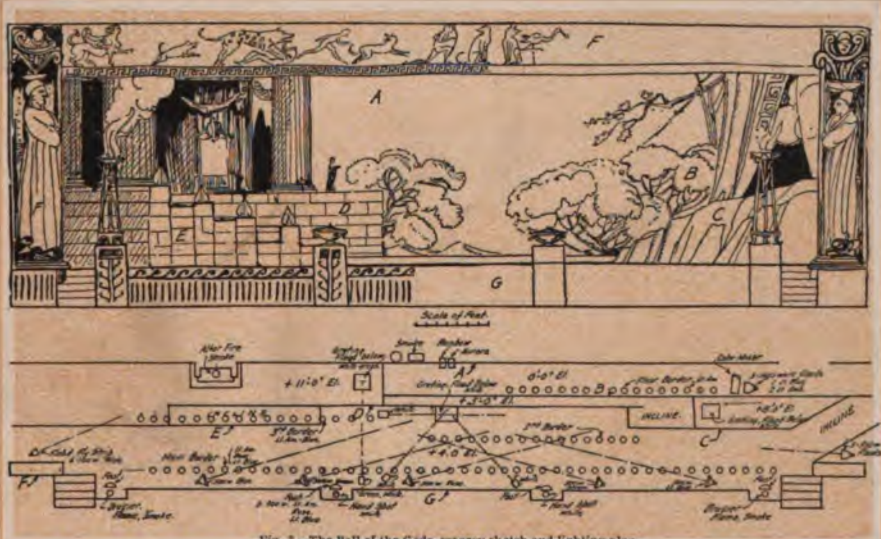


Fig. 8.—The Ball of the Gods, scenery sketch and lighting plan.

The Lighting Scheme must be Worked Out as Elaborately as the Scenery. Plan for "The Ball of the Gods" green and blue, and by combining these any color may be obtained, including approximate day-light, as well as any gradation of tone through any particular series of hues.

Newer methods entirely discard the arc-light, substituting several sizes of nitrogen lamp. The arc is condemned as heavy, needing constant attention, and where alternating current must be used, being extremely noisy.

Foot-lights next received attention, to be reformed rather than abolished. The ordinary arrangement gave too much glare and lacked flexibility in following the changing dramatic situations. The revised version is a sectional foot-light, controlled in sections, and portable. Glare is eliminated by having the bulbs set with filaments approaching the horizontal and enclosed in deep bowl-shaped reflectors. Belasco has devised a special method for eliminating glare from the foot-lights in his own theatre, but this is not available for the road.

Photo by White

Scene from "Bushido," a Japanese Play Produced by the Washington Square Players

In place of the front of the house lights, the progressive element advocates small nitrogen spot-lights mounted on the face of the balcony, an English device, its first American adaption being employed by Miss Maude Adams. Similarly all the usual lighting methods were studied to see whether they were producing the effect wanted dramatically, and accomplishing it by the simplest means. Color, too, was subjected to an intensive investigation which merits separate recording.

Results of this work not only can be seen but have already met approval. Theatregoers will remember the revival of "Peter Pan" last Winter, an admirable example of careful American stage-lighting. More striking are some of the effects in the present productions of the Washington Square players, especially the one-act Japanese tragedy, "Bushido," the lighting of which is said to outrank esthetically previous American efforts.

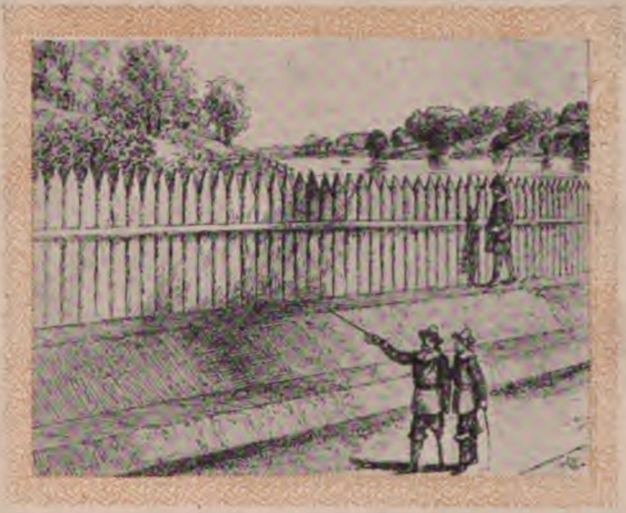
From Stockade to Stock

IF the mission of the present Wall Street could be described in one word, that word would sound remarkably like *inclusive*. There was a time when the Street's pretext for being was distinctly *exclusive*.

Originally comprised in Van Twiller's farm, this strip of territory in the 1670's had come to constitute the outer boundary of the city's fortifications. These defenses, made up of stout walls and block houses, terminated in a high palisade along the line of the later and appropriately termed Wall Street. The exclusion practiced by this formidable bulwark weighed heavily on the neighboring Indians whose admission within seems to have been for treaty purposes only. Such were the times when the *Schout* daily reviewed the military before the *Stadt Huys* heading Coenties Slip. At six in the evening this worthy received the keys of the City, locked the public gates, and stationed sentinels. The day began by his unlocking of the gates at sunrise.

Twenty years later measures were taken to enlarge the city by moving the fortifications farther out. Among the new thoroughfares thus made possible was Wall Street with a wholly reckless width of thirty-six feet. Regardless of this supposed handicap the Street became speedily one of the most frequented and important in town. Not only were impressive residences put up along its entire length, but thriving business houses were not slow in locating here in conjunction with the famous Coffee House, a contemporary of Faunce's Tavern. Both of these favored hostelries sheltered numerous "governors' meetings" at which the political destinies of the hour were fashioned and consummated.

The suburban character of the original Street is revealed as late as 1780 in the doleful necessity of cutting down numbers of its shade trees to meet a demand for stove wood arising from the premature half-freezing of the River. The Wall Street of this period contrasts forcibly enough with



A Stout Stockade along the Line of the Later and Appropriately termed Wall Street

a present-day Manhattan thoroughfare; compared with its subsequent development, the old Street suggests the turning back of more than a mere century of events. Then, to quote a contemporary, it was "the gay promenade where many a gallant's heart has been pierced by glances shot from beneath the frizzed locks of the fair sex; while the beaux with their powdered curls before and their neat black silk bags behind the head, their laced ruffles and desperately squared toes, were equally *comme il faut.*"

The disastrous fire of 1804, though it destroyed fifteen stores and dwellings on Wall Street, proved a distinct blessing by the resurrecting of these properties in brick and stone in place of the prevailing frame structures. A marked finish was given to the Street by the completion in 1828 of the Merchants' Exchange. Further reconstruction of a permanent nature was called for by the great fire of December, 1835, in which twenty-six prominent Wall Street buildings including the new Exchange were burned to the ground.

By this time but few residences survived of the once goodly array of mansions that vied with attractive stores and offices in making Wall Street the pride of the town. And not only were dwellings put on the retired list. As the financial importance of the Street increased, retail establishments of all sorts moved elsewhere. Three or four story twenty-five and fifty-foot stores disappeared, making room for the five and six floored office structures then considered in every way momentous. Such was the aspect of the Street at the advent in the early 80's of that epoch-making force that was presently to transform both Street and City.

Edison's first electric station, at 255 Pearl Street, began operation in September, 1882. The fact that Wall

The Disastrous Fire of 1804 Meant the Resurrecting of the Old Properties in Brick and Stone

Photographic Bureau of The New York Edison Company

The Wall Street of Today, the Wall Street of Electrical Construction and Service

Street, then as now, possessed a more than mortal share of business acumen is seen in the readiness with which the concerns along its curb adopted the new lighting. Drexel, Morgan and Company were connected from the start. Within a year, no less than fifty of these establishments took advantage of Edison Service, among the number the New York Fire Insurance Company, the United States Assay Office, the Bank of Montreal, Zimmerman and Forshay, the Leather Manufacturers' Bank, Cartini and Company, and Middleton, Dickman and Company.

Needless to say, the installations recorded were not sizable on the basis of modern reckoning, though at the time they were impressive enough. The Drexel-Morgan equipment, the largest of them all, consisted of 106 lamps. Many averaged around sixty and seventy; most about twenty, and not a few contented themselves with four and five lights to begin with. In fact the lamp service of the entire Street was considerably under the installation required by the average office building of today.

Increases, however, were rapid, not only in the size of existing installations but in the number of customers. On October 1st of the initial year the total connected load was 1284 fifty watt equivalents. By January 1st, such proved the popularity of the new illuminant, this load had grown to 3477, while the following October the contracts secured called for 8573 equivalents. Scarcely credible in comparison with these modest beginnings is the present connected load of fifty watt equivalents.

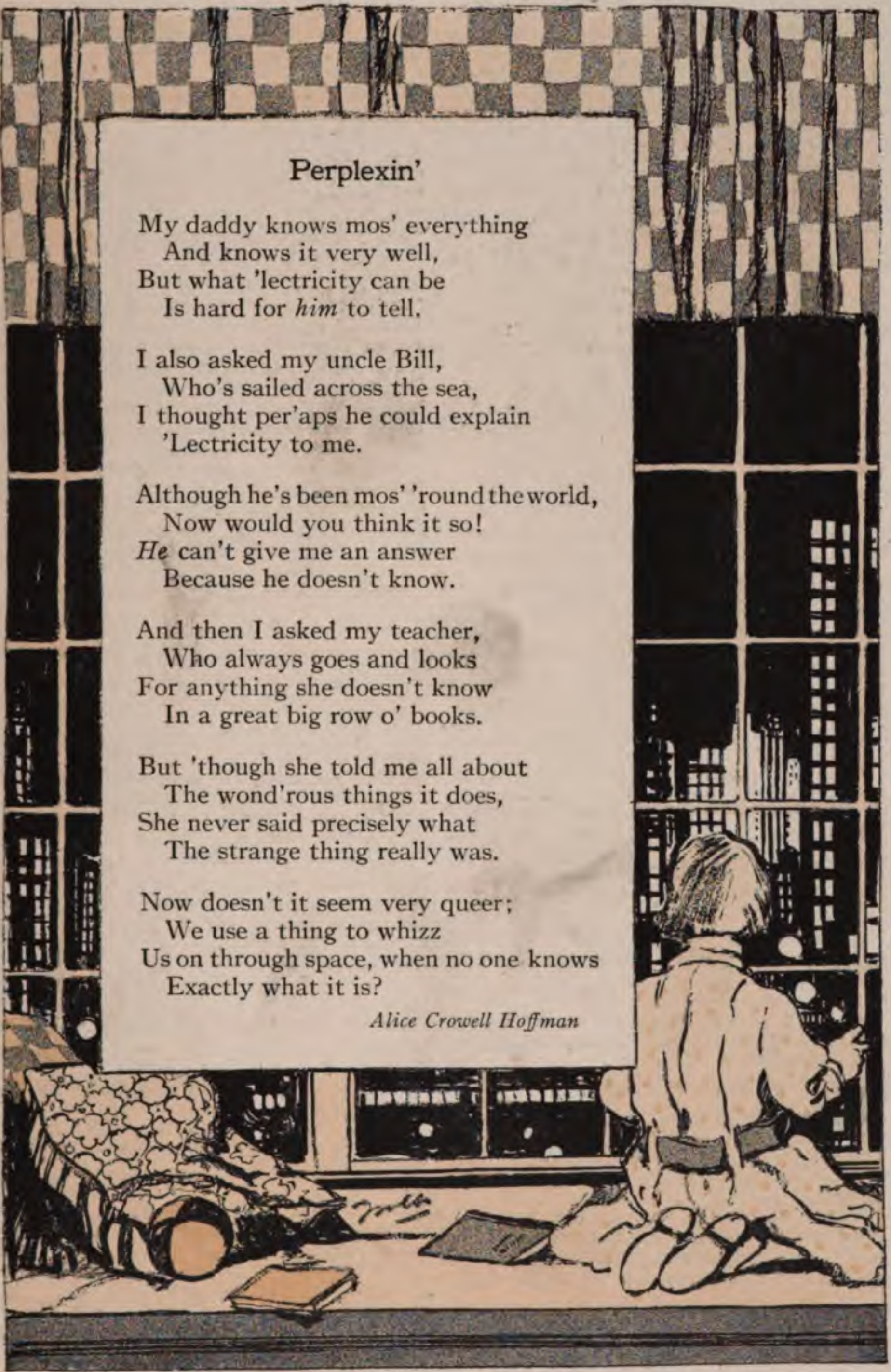
Aside from the mere lighting of the old-time structures lining the Street, electricity, on the practicable marketing of motor power, made possible and actually set about the erection of the modern office building. Again the Street, with characteristic foresight, availed itself of this new opportunity and proceeded by no uncertain de-

By 1835 few Residences Survived of the once Goodly Array of Mansions that Lined the Street

grees to rebuild itself. So eager was this resolve that in some instances two buildings have since risen on the site of the old structure contemporary with the start of Central Station Service. By way of conspicuous illustration stands the present tower-like edifice of the Bankers' Trust Company, a building preceded but a short time ago by a ten-story structure considered remarkable in its day as compared with the original property occupying the site.

The workable introduction of electric blower systems has been primarily responsible for the marvelous underground and much begirdled vault developments boasted by the modern banking institution. So inaccessible are these dungeon-like excavations and so remote from the outer air that their mere inspection would be impracticable without the aid of electrically driven ventilating apparatus. Until recently the forcing into these enclosures of air of the prevailing outdoor temperature was thought satisfactory. At present one at least of the newer buildings supplies its accountants with air agreeably cooled in summer and sufficiently warmed in winter. In this and other establishments electric coin hoists are in constant use along with a host of electric calculating, check handling, and detecting devices unknown to business in general but unthinkably essential to the accuracy and dispatch of up-to-date banking. A late and most interesting instance of motor operation and one that reminds forcibly of changes since simpler days, is the opening and closing of the great doors of the vaults, masses of solid steel often weighing more than simple teller power could possibly handle. Financially speaking, the only undiscovered function remaining for electricity is actually to *make* money; and some there are who believe it is doing that now.

The agent in Pekin, for a special system of indirect lighting of American manufacture, has arranged to supply an installation for the Chinese Presidential residence. This equipment will contain certain of the most modern office effects, with a view to providing for the new Executive's private offices. A transaction of this character bespeaks not alone the progressiveness of the new Chinese régime but the prestige enjoyed by American goods in this part of the world.



Perplexin'

My daddy knows mos' everything
  And knows it very well,
But what 'lectricity can be
  Is hard for *him* to tell.

I also asked my uncle Bill,
  Who's sailed across the sea,
I thought per'aps he could explain
  'Lectricity to me.

Although he's been mos' 'round the world,
  Now would you think it so!
He can't give me an answer
  Because he doesn't know.

And then I asked my teacher,
  Who always goes and looks
For anything she doesn't know
  In a great big row o' books.

But 'though she told me all about
  The wond'rous things it does,
She never said precisely what
  The strange thing really was.

Now doesn't it seem very queer;
  We use a thing to whizz
Us on through space, when no one knows
  Exactly what it is?

Alice Crowell Hoffman

Manufacturers and Agents (Continued)

Motors

General Uses

Allis-Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Lincoln Electric Co—149 Broadway
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
Russell & Co—56 W 45th St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St
Ward Leonard Electric Co—Mount Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Madison Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St

Refrigeration

Automatic Refrigerating Co—50 East 42d St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Madison Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

B & B Sign Company—347 Fifth Ave
Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—649 W 43d St
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Manheimer Co The—162 W 34th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Snow & Co—531 W 46th St
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St
Wertheimer Sign Co—558 W 36th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—511 W 42d St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—22 Dey St
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro-Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Bromley-Merseles Mfg Co (Dishwashing Machines)—1328 Broadway
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 Broadway
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Shelton Electric Co—30 E 42d St
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
Ward Leonard Electric Co—Mount Vernon N Y
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—35 Vestry St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Avenue
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Innovation Electric Co—585 Hudson St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker Metal Furniture Co—255 Canal St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Elec Co—463 West St and 105 W 40th St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cataract—46 E 41st St
Home Devices Corp (Modern)—Bush Terminal Brooklyn
Hurley Machine Co—147-157 W 42d St
National Sewing Machine Co—290 Broadway
Northwestern Electric Equipment Co (Geyser)—35 Vestry St
Sibley-Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Elec Co—105 W 40th St and 463 West St

Welders

Welding Materials Co—114 Liberty St
Westinghouse Electric & Mfg Co—165 Broadway
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Cons Co
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Canal St 313—Oneida Electric Co
Canal St 417—G E Engineering Co
Canal St 417—The Maintenance Co
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eighth Ave 461—Edward B Stott & Co
Eighth Ave 766—H Lauer & Co
Fifth Ave 75—H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 819—Thomas Hindley & Son
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—Watson Flagg Eng Co
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Elec Co
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Elec Cont Co
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Elec Construction Co
West 31st St 109—Jandous Elec Equip Co Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—N Y Elec Installation Co
West 37th St 133—A J Buschmann Co
West 38th St 39-41—Dennis G Brussel
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 56—Russell & Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Mfg Co

East of Broadway and Fifth Avenue

Beekman St 74—Jordan Bros Const Co
Bible House 78—Thos C Miller
Beaver St 42—Hanover Elect Co
Broome St 114—B H Weinberg
Broome St 434—The Globe Electric Contracting & Repairing Company
Cedar St 16—Wm Truswell & Son
Chrystie St 155—A Fox
Dover St 8—Hazazer Electric Co Inc
East Houston St 93—I Berkowitz
East 3d St 48—B Ackerman Co
East 3d St 136—H A Schreiber
East 8th St 4—J M Smith & Son
East 8th St 48—American Pressing Iron Co
East 15th St 6—Geo D Beinert Inc
East 15th St 416—Frank Bloom

Department Stores which Sell Electric Appliances

Adams-Flanigan Co—Westchester & Third Ave Bronx Basement
Barnett Bros—Columbus Ave & 74th St Basement
*Bloomingdale Bros—59th St & Third Ave Basement
John Daniell Sons—759 Broadway Basement
*Gimbel Bros—6th Ave & 33d St Fifth Floor
*J B Greenhut & Co—6th Ave & 18th St Basement
H C F Koch & Co—132 W 125th St Basement
Lewis & Conger—Sixth Ave & 45th St First Floor
Liggett-Riker-Hegeman Drug Stores
*Lord & Taylor—5th Ave & 38th St Fifth Floor
*James McCreery—5 W 34th St Sixth Floor
*R H Macy & Co—Broadway & 35th St Basement
Rothenberg & Co—34 W 14th St Basement
Stern Bros—41 W 42d St Fourth Floor
*John Wanamaker—Broadway & 10th St Seventh Floor

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*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 West 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Brooklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Clarence L Smith Co Agents)—544 W 30th St (C)
Cowan Truck Co—114 Liberty St (I)
Electric Automobile Sales Corp—Times Bldg (C)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey Street Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 1834 Broadway
Ohio Electric Car Co (Robt W Schuette Agent)—236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—Mt Vernon N Y (C)

Charging Apparatus

Allan-Bradley Co—50 Church St
Cutler-Hammer Mfg Co—50 Church St
Eck Dynamo & Motor Co—Belleville N J
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Lincoln Electric Co—149 Broadway
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Allan-Bradley Co—50 Church St
Cutler-Hammer Mfg Co—50 Church St
Eck Dynamo & Motor Co—Belleville N J
Edison Thomas A Inc—141 Lakeside Ave Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Lincoln Electric Co—149 Broadway
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Manufacturing Co—165 Broadway

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—2 West End Ave and 64th St
Gassaway F S Inc—212 E 54th St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42 St
Phila Storage Battery Co—American Building Broadway and 58th St
Storage Battery Supply Co—239 East 27th St

Manufacturers and Agents (Continued)

Mechanical and Battery Parts (Concluded)

Walker Vehicle Co—531 W 46th St
Willard Storage Bat Co The—228-30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric—Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303-305 Fifth Avenue
Hospital Supply Co The—53-55 Fifth Avenue
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Ave
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Broadway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—35 Vestry St
Neel-Armstrong Co—29 W 34th St
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 Eighth Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—Fifth Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 E 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 W 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 B'way
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumbwaiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 W Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
National Elevator Co—62-64 W 45th St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
American Blower Co—141 Broadway
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St
Curtis Pneumatic Machinery Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—649 W 43d St
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Gerdes Theo R N—123 Liberty St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Automatic Fire Alarm Co—416 Broadway
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—649 W 43rd St
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
Kandem Electric Co Inc—49 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St
Western Elec Co—463 West St and 105 W 40th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 B'way

Globes—Reflectors

Dealing William—1 Hudson St
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42d St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Harry Pickhardt—98 Park Place
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn N Y

Heating and Cooking

Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Federal Sign System (Electric)—649 W 43d St
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialites Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 105 W 40th St
Wicks Electric Co—Cleveland Ohio
Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Low Voltage Direct Current Bell Ringers

U S E M Co—301 West 37th St

(*Continued on last four pages*)

The New York Edison Company

General Offices
Irving Place & 15th St
Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Canal 8600
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
124 W 42d St	Bryant 5262
151 East 86th St	Lenox 7780
27 East 125th St	Harlem 4020
362 East 149th St	Melrose 9900

All showrooms open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Canal 8600—includes the territory south of Christopher and Eighth Sts, west of the Bowery and south of Catharine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street, east of and including the Bowery, and north of and including Catharine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

Riverfront, Ravenswood

VOLUME IX APRIL, 1917 NUMBER 11

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N F Brady, President
Joseph Williams, Treasurer
Lewis B Gawtry, Secretary

It was not so many years ago that one of our rural cousins returning home from a visit to the city, boasted of the fact that he still possessed his roll of greenbacks. "They don't sell gold bricks any more," he explained. "They have a new trick—artificial ice that they peddle from wagons. And a lot of people were buying it too. But they couldn't fool me."

◆

As pointed out in an earlier issue of The Edison Monthly, the effort to provide refrigeration independent of the elements dates back to the days of antiquity, although it was not until the 50's that any commercially practicable method was available.

Today artificial ice and methods of artificial refrigeration have not only attained a place of commanding importance as competitors with natural ice, but they have made possible new applications of refrigeration hitherto undreamed of.

◆

The field of artificial refrigeration, as described elsewhere in this issue, is broad. It includes the manufacture of ice, the storage of foods and furs and flowers, refrigeration for the home and a portable rink. Electricity has long been associated with many of the phases of artificial refrigeration, in fact it is not too much to say, that but for electricity, the application of refrigeration would indeed be limited.

◆

With the Barge Canal nearing completion and considerable of its length already in actual operation, New York State is beginning to realize on its $154,000,000 investment in waterways. To this canal we may well look for a solution of the transportation problems which are causing such shortages of necessities in our cities. With vast quantities of slow moving freight diverted to canal boats, the railroads will be relieved of one of the chief causes of terminal congestion.

But just as the carrying capacity of a railroad is limited by the capacity of its terminals so the water route will be limited by the capacity of the docking facilities along the way. It is gratifying to know that even now the city is planning the construction of docks that shall in every way equal the importance of the canal.

◆

It was just one hundred years ago on the 17th of this month that the Legislature of New York State authorized the construction of the Erie Canal and eight years later the waterway across the state was completed. It was possible for a boat to sail all the way from the Great Lakes to the Atlantic Ocean. This "Wedding of Waters" was fittingly solemnized when Governor Clinton poured two barrels of Lake Erie water into the waters of New York harbor.

Now, within a period of considerably less than one hundred years, the canal has been entirely rebuilt. It took eight years to build the old four-foot deep ditch. The present Barge Canal was started in 1903 and will be completed next year. It is in partial operation now. While this is an appreciably longer period of time it must be remembered that compared with the Erie the Barge Canal is longer and much larger. It has a total length of 790 miles. The Erie was simply a connection between Buffalo and Albany. The Barge Canal not only duplicates that route but has a branch connecting with Lake Champlain. Shorter branches from the main east and west artery reach Oswego on the north and Cayuga Lake on the south.

❧

That this engineering feat, which may well be compared with the building of the Panama Canal, was completed in the short time it was, is due entirely to the methods employed by the canal engineers.

Electric power was used almost entirely. Some idea of the aggregate of this motor installation may be gained from the knowledge that one machine —a bridge conveyor used near Rochester—required motors totaling five hundred horsepower.

Built by electric motors, the finished canal is also to depend upon electricity for its operation, the equipment of the various locks, as described elsewhere in this issue, exceeding five thousand horsepower.

❧

During the past Winter the City, because of the coal shortage, experienced one of the most trying situations in its history. Consumers were confronted with high prices, uncertain deliveries and in many cases with an absolute lack of fuel. At times the commodity could hardly be had at any price. Great hardship was felt not only in households but in public buildings, commercial institutions and manufacturing establishments. Many such buildings faced the necessity of either closing up for the winter or paying exorbitant prices.

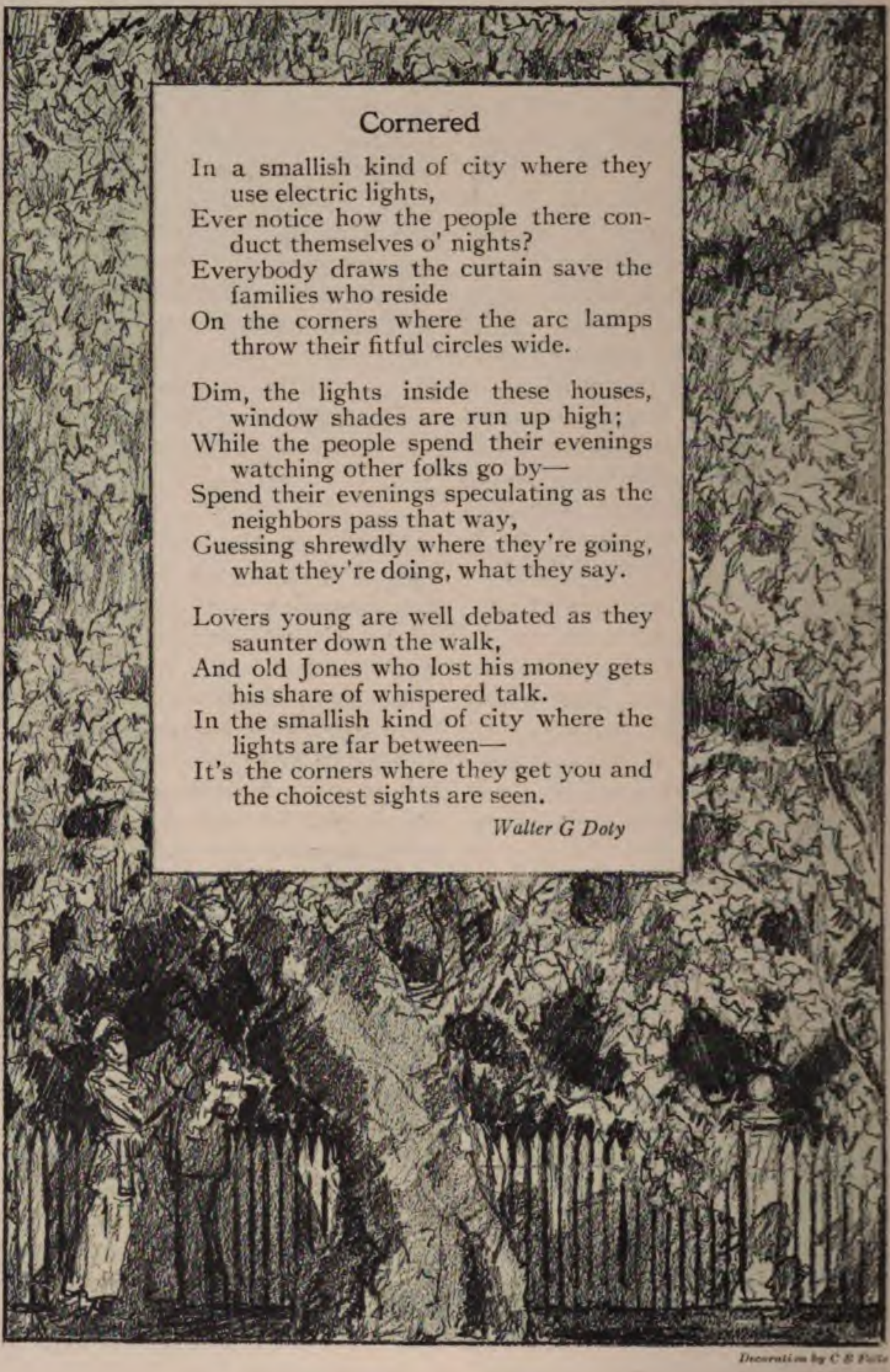
That they did neither is due to one factor—the Central Station.

❧

Able to get along with varying degrees of success when conditions are fair, the engine rooms of these establishments were hard hit when fuel became scarce. Their natural recourse was to those who specialize in the production of electrical energy, so they joined with that group of manufacturers and building managements already familiar through long association with the advantages of Central Station service.

The Central Station, day after day and through every hour of the day, generated and delivered the power, which to many places meant very existence. Without interruption and in a steady flow the energy of the generators went over the wires to every part of the city.

Waterside was confronted with an unexpected burden and it met it in a manner which amply served to emphasize the will and the spirit that underlie the motto of The New York Edison Company and to prove that under any and all conditions, its resources are "At Your Service."



Cornered

In a smallish kind of city where they
 use electric lights,
Ever notice how the people there conduct themselves o' nights?
Everybody draws the curtain save the
 families who reside
On the corners where the arc lamps
 throw their fitful circles wide.

Dim, the lights inside these houses,
 window shades are run up high;
While the people spend their evenings
 watching other folks go by—
Spend their evenings speculating as the
 neighbors pass that way,
Guessing shrewdly where they're going,
 what they're doing, what they say.

Lovers young are well debated as they
 saunter down the walk,
And old Jones who lost his money gets
 his share of whispered talk.
In the smallish kind of city where the
 lights are far between—
It's the corners where they get you and
 the choicest sights are seen.

Walter G Doty

Decoration by C B Falls

The Barge Canal and Motor Power

ON October 25, 1825, at about three o'clock in the afternoon, a cannon boomed across the waters of Lake Erie, at Buffalo. Before its echo had died away, another cannon a few miles distant boomed, then another and still another, until the cannonade had crossed the entire state to Albany and on down the Hudson River to New York. The occasion was the opening of the Erie Canal. Such was the beginning of a canal system which now, by means of the recently opened and soon to be completed Barge Canal, reaches every part of New York State.

The effect of the canal opening was felt immediately, not only throughout the state but in the Great Lakes region as well. A new avenue of transit and commerce had been established to the West and towns and villages destined later to become cities of importance to the nation and the state sprang up along its course, while shipping which once went to Philadelphia was diverted to New York.

In 1903, almost ninety years from the date of the beginning of the Erie Canal, the people of New York voted to enlarge the waterway and make of it a Barge Canal, with a minimum depth of twelve feet, and a minimum width of ninety-four feet, enabling it to float barges of three thousand tons capacity.

As originally constructed the Erie Canal had a depth of but four feet, was about forty-two feet wide and could float a boat carrying thirty tons of freight. In 1882 it had been enlarged to a depth of seven feet and floated mule drawn canal boats of a capacity of 240 tons.

Reconstruction Started

The reconstruction was begun immediately and now the waterway has been brought almost to completion.

As reconstructed the canal consists of four branches. The Erie stretches across the state from Waterford north of Albany to Tonawanda, where the Niagara River affords the connecting link with the Great Lakes. The Champlain, running northward along the eastern boundary of the state from Waterford to Whitehall at the southern end of Lake Champlain, forms an all-water connection with the St. Lawrence River. The Oswego, branching from the Erie Canal north of Syracuse and running northward to Oswego on Lake Ontario, and the Cayuga-Seneca Canal, leaving the Erie west of Oswego junction and running southward, connecting the two large lakes from which it takes its name, are the smaller but none the less important links of the system.

The construction of the Barge Canal represents one of the greatest engineering feats of all time. It is ten times as long as the Panama Canal and has fifty-seven pairs of locks to the Panama's six. The five locks on the Barge Canal at Waterford have the greatest lift of any locks in the world, elevating boats to a height of 169 feet, or within one foot of twice the total lift of the Panama locks. Whereas the Panama Canal was built through an undeveloped country where the authority of the Canal Commission was supreme, the Barge Canal was built through 790 miles of thickly settled territory where property rights hindered the work of the engineers, where railroad and highway bridges had to be replaced and rebuilt and where during the entire operation regular traffic had to be maintained in the old canals.

The accomplishment of the work has been made possible only through the retention of the highest grade of engineering skill and the employment of the latest and most improved methods of construction. As is to be expected electricity has played and will continue to play an important part in the construction and operation of the canal.

Barges and Tug Boat being Locked through the Champlain Canal

A great variety of machinery was used in the actual work of building and a great percentage of this employed electricity for its motive power. One of the most notable pieces of electrical equipment used in the excavating operations was installed near Rochester. This was what is known as a bridge conveyor, used for excavating in deep rock. It straddled the canal itself, being pushed forward on double tracks. A trolley arrangement ran back and forth, and from side to side, and from this was suspended the excavator. Four eighty-horsepower motors operated the hoist, four thirty-horsepower motors the trolley, while two thirty-horsepower

The Equipment of this Electrically Operated Hydraulic Dredge includes a 700-Horsepower Pump Motor, a 200-Horsepower Cutter Machinery Motor, a 75-Horsepower Winch Motor and Several Small Units

The Turbo-Electric Power Plant at Lock 6 on the Champlain Canal

motors operated the travel mechanism.

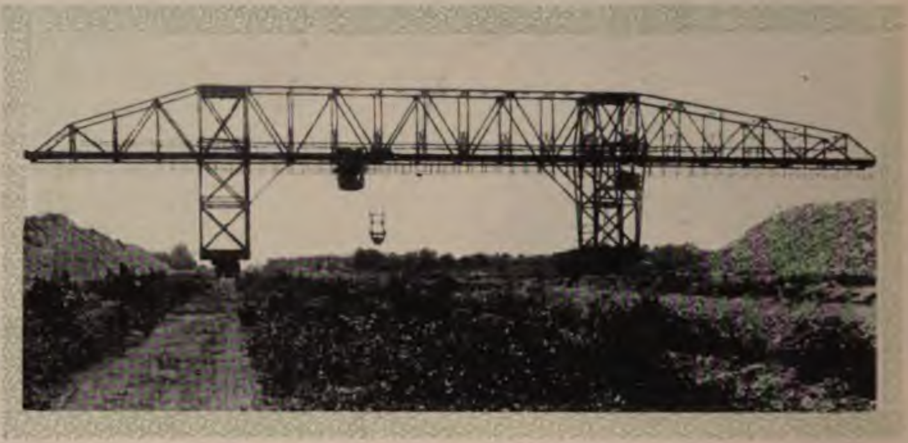
Several electrically operated hydraulic dredges were employed in various parts of the canal, each using a total of 975 horsepower. Drag line excavators and scrapers of the cantilever frame type also played their part, each one of the former using 134 horsepower and the latter 225, while a host of other equipment completed the installation. Where conditions made it possible the construction machinery was operated by power from the Central Station supplying the neighborhood.

The operation of the completed locks depends entirely upon electricity. The gates, valves, capstans, guard gates and other moveable parts all derive their motive power from electricity, the total working load of the entire canal being 5,462 horsepower.

To show the time saved by motor operated locks as compared with hand operation, interesting figures have been compiled as a result of a test conducted at Lock No 7 at Visschers Ferry. The weight of each leaf of the upper gate of this lock is 45,000 pounds and of the lower gate 97,000 pounds. To open the gates by hand required ten minutes, by motor forty seconds; to open valves by hand fifteen minutes, by motor seventy seconds; to fill the locks by hand eighteen minutes, by motor six minutes; to empty the lock by hand eighteen minutes, by motor four minutes; time to lock boat through by hand forty-five minutes, by motor twenty minutes.

An interesting feature of these power houses, which are built entirely of reinforced concrete, is the fact that they are all heated by electric radiators. Another thing of unusual interest at each lock is the fact that two electrically operated capstans are provided, one at each end, to pull the boats through the locks. The motors are located in water-tight compartments in the concrete walls. The line

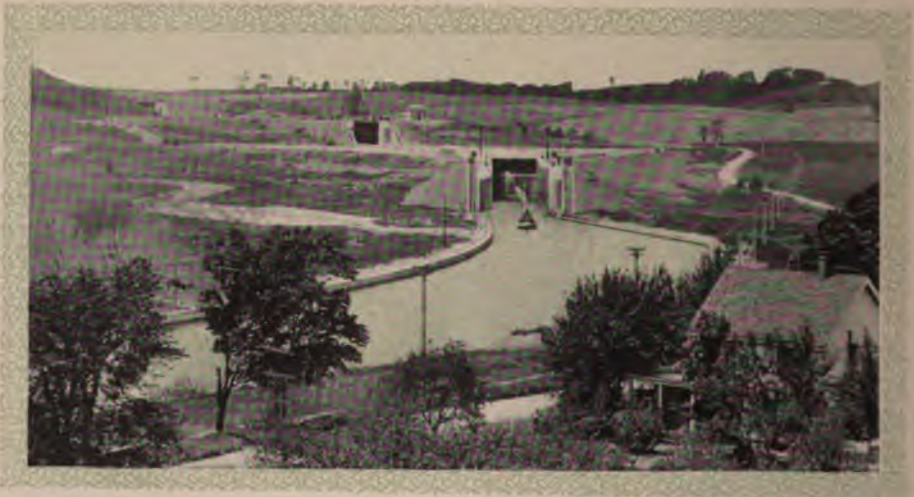
The Locks of the old Erie Canal and the new Barge Canal at Lockport



The Bridge Conveyor used for Excavating near Rochester was Equipped with Ten Motors totaling 500 Horsepower

from a barge is given one complete turn around the capstan, the motor is started, and the man standing at the bow merely hauls in the slack as the barge is pulled forward.

Aside from the other engineering features of its construction the New York State Barge Canal would be noteworthy for its electrical equipment alone, and in this the General Electric Company and the Lord Electric Company take special pride, the former having supplied the total electrical equipment at more than fifty of the fifty-seven locks and the latter being the contractors for the complete power plants, as well as the electrical equipment and machinery required for the operation of the completed locks.



These Five Locks at Waterford, N Y, have a Lift of Within One Foot of Twice that of the Panama Canal

The New Mews

GREENWICH VILLAGE, that abiding place of last century ways and traditions, has recently welcomed into its midst an exceptional combination of modernity and Old World picturesqueness—the group of studio buildings erected by the Sailors' Snug Harbor Corporation in the block at Eighth Street, University Place and Washington Mews.

Replacing on Eighth Street the row of old three and four story structures with stores on the street and cheap lofts above, and on Washington Mews the low and dingy stables where a few artists from time to time have found a working abode, this new group of buildings rises in a harmonious conglomeration of architectural styles. A bit of old English, a smack of French, a touch of Dutch quaintness, an illusive suggestion too of other countries and climes, surmounted by red tiled roofs in Spanish style, all with an effect thoroughly expressive of the cosmopolitanism of New York —such is the new art center.

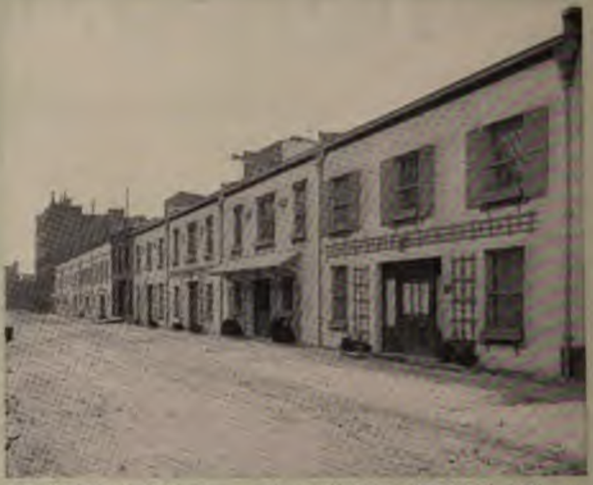
To the lover of the by-way, there is particular gratification in the metamorphosis of Washington Mews which is thus begun. For the reconstruction of this street, as well as that of the whole block, notwithstanding it is primarily a business enterprise designed to increase the income of the Sailors' Snug Harbor estate, is none the less an extremely successful attempt to provide for artists and other followers of the muses an environment that will give true inspiration for their work.

Entering the Mews from University Place, one passes through an ornamental gateway whose tile-patterned posts are topped by decorative lamps. Low duplex studios in white stucco are on the right of the street, their doors opening directly on the walk, their thresholds protected by slanting Dutch roofs. Over the rows of windows is lattice work which in summer will bear the weight of vines, while tile inserts of medieval design give a touch of color and quaintness.

Modern Studio Arrangement

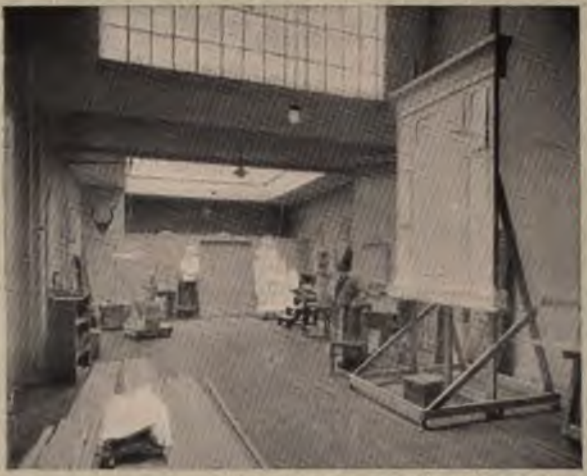
The much cherished conception of a studio interior with "a balcony looking down upon a larger room," has given place in these buildings on the Mews to the more conventional arrangement of, three rooms on the ground floor and a studio above. The living room is at the rear on the ground floor, its great windows against the northern light. Its pride is a large open fireplace of brick with Moravian tile decorations, an ideal spot for discussions of art and art ideals. For the traditional kerosene lamp of the stable studio a full complement of electric lighting has been substituted, with fixtures in the latest design.

From his open studio windows, the painter at his easel, the sculptor at his marble, or the writer at his desk may look down into an inviting formal court, where in the center of a paved rectangle a summer house, in warm weather days, will be almost concealed by a riot of flowering vines. Hedges of box border the walks, and at their entrances are marble benches in Roman design and graceful urns with pointed box trees. There are three of these courts, all connected and similar, save that the easterly court boasts of two summer houses instead of one. The hallways of the dwellings open on the gardens; and a convenient flight of steps and an ornamental iron gateway give exit to University Place.


Maynicke & Franke, Architects *Photographic Bureau of The New York Edison Co*

Stable Studios on the Mews have been Replaced by these Artistic Buildings

The five and six stories of the Eighth Street buildings offer an imposing frontage on the street. In their exterior is seen again the frequent use of the vari-colored tile inserts that form such a pleasing and delicate contrast with the white stucco. Windows outlined in brick, light green wooden blinds and window boxes, together with the gay curtains that the occupants have hung at the windows, make for an effect both colorful and unique. To one approaching the corner from the north of University Place or from eastern Eighth Street, the group rears itself with impressiveness in the midst of weather-begrimed neighbors.


Photographic Bureau of The New York Edison Company

The Studio of Mr Paul Manship Occupies the Large Building Terminating the Mews at University Place

Studio apartments in these buildings are largely of three rooms, with the same features of open fireplaces (supplemented of course by steam heat), well laid parquet floors, ceilings of sufficient height for dignity, electric lighting equipment — and sunshine galore! For since windows face north and south, there is opportunity for Old Sol to peer in on the progress of art both morning and afternoon. Hallways, with red-tiled floors and cement walls patterned like stone, partake of the general roominess.

Though the passer-by might easily fail to detect it, so excellent is the harmony of composition, there are really eighteen separate buildings in the entire group, including numbers 6-8, 12-14, 18-26 West Eighth Street; and 42-50 and 54-56 Washington Mews. Current will be supplied by The New York Edison Company both for lighting and for a motor to operate a house pump in the highest of the buildings at 6-8 West Eighth Street.

The erection of this group is one of the first extensive changes which has been made by the Sailors' Snug Harbor Corporation to its sixteen acres of property, including all the blocks within the boundaries of Fourth Avenue, Tenth Street, Fifth Avenue and Waverly and Astor Places. When Captain Randall died in 1801 and left "Minto Farm" as an estate to be administered for the support of decrepit sailors, the will technically seemed to prohibit the income from being used to improve the property which was its source. John Wanamaker has a ninety-nine year lease on the land occupied by his two stores, so the income from that is certain enough; but the income from the section about University Place, due to deterioration of the buildings and failure to meet modern business requirements has fallen off considerably of late, and it actually seemed possible that a great many vacancies would result. A friendly suit a few years ago, however, empowered the trustees to carry out plans of reconstruction, in which plans the new studios are a first important step.

Many tenants, including several whose names are widely known in art or letters, have found here ideal surroundings. Moreover as a new center of art his fine studio group cannot fail to have a far-reaching effect upon future building in the Village.

Photographic Bureau of The New York Edison Company

One of the Formal Courts where Flowers and Vines will Riot in the Summertime

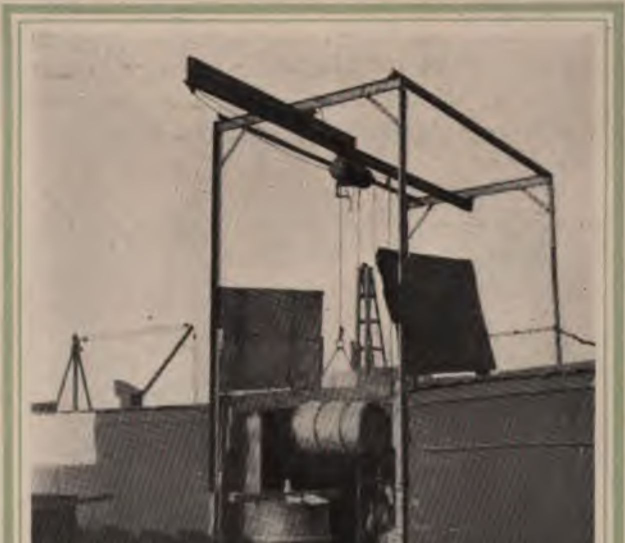
Beating Time and Tide

TIME and tide have not a reputation for considerateness. A new electric dock hoist now operating at Fifty-fourth Street and North River is independent of both.

Until recently the Gerrodette Gasoline Depot at this address was decidedly dependent. The oil is stored in a sizable covered barge anchored alongside the wharf at the required distance from the shore line. Formerly, to deposit the barrels upon the wharf meant waiting for high tide when the deck of the scow was approximately at a level with the floor of the pier. When the tide was accommodating this could be done at the right time in the morning, and the needed amount of gasoline unloaded to meet the day's demands. When the tide was otherwise disposed, as usually happened, the oil had to be removed at most inconvenient times and frequently with the aid of an inclined plank up which the barrels were rolled by hand.

The new arrangement consisting of a one-horsepower electric motor and a hoist especially constructed by Mr. Gerrodette, merits adoption for similar work along the entire waterfront. Edison Service is carried to the scow under the dock flooring and down a flexible cable to the storage enclosure. The motor is set in a near corner. The hoist emerges through a hatch in the roof and is fitted with an "I" beam and a necessary guide rope.

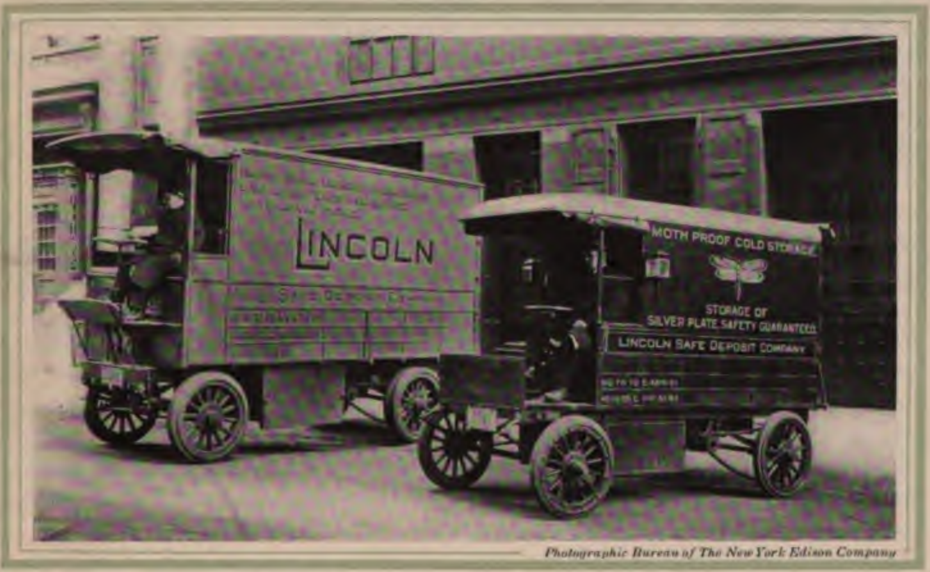
On being hoisted above the hatch, a barrel is run out along the beam to a point over the dock and directly over the end of a waiting autotruck. An automatic device tips the beam at the right moment, giving the barrel an impetus along the truck body. The essentially remarkable feature of the apparatus is the work actually done by so small a motor at a hoisting rate of twenty-five feet a minute. Edison Service is responsible.


Photographic Bureau of The New York Edison Company

The Electric Dock Hoist, at Fifty-fourth Street and North River, is Entirely Independent of Time and Tide

Trucks that Last

OUT before it is light, run all day, and home to the garage after dark six days in the week—such is the hard working existence of the average electric truck. This constant wear and tear, for the most part on the city streets, is a severe test of any car's lasting powers.



Photographic Bureau of The New York Edison Company

The Lincoln Company "Stopped Killing Horses" in 1907

Of all the good points urged in favor of the electric truck endurance is one of the chief. Statistics, usually so stupid, are interesting in this case because they show that the enthusiasm of the electric owners is warranted by facts. Today there exists a whole fleet of electric trucks that were at work eighteen years ago; there are many single ones whose term of service exceeds ten years, while trucks with records extending back more than five years are a common occurrence.

The veteran fleet is that of the Gorham Company; express companies, breweries and the public utility companies have several ten-year cars in their service, while five-year cars are found in almost every city activity.

"The electric truck has made good in our delivery service," says G M Ballou of the Cushman Bakeries. "Especially have we found it valuable in short hauls, which constitute of course the majority of all our work."

Five years ago Cushman's decided to experiment. Their delivery system up to that time had consisted entirely of horse-drawn wagons, for motors had been thought too expensive. But eventually the heads of

Fifty of the American Express Company's huge Electric Fleet

the business, confronted with rising cost of delivery and other problems incidental to the horse, decided upon a change. Two special electric delivery trucks were made with extra heavy bodies and tires, and put into the hardest kind of all-day work.

That was five years ago. "Not five dollars altogether has had to be spent on each of those trucks for repairs," boasts Mr Ballou. The reason he attributes to two causes, that they were made heavy enough in the beginning to stand the wear and tear of daily usage and that they have been well looked after in the matter of minor repairs. The two trucks today are in as good condition as when first installed.

In the new building which the Cushman Company is putting up on Lawrence Street are eighteen charging boards so that eventually, when the horse service is done away with entirely, there will be ample provision for a large fleet of electric vehicles. In delivery service like a bakery's the majority of trips are for short distances with frequent stops. Tests of comparative costs show that for any haul of more than a half mile the motor truck is less expensive than the horse. This is on a basis of a team's average speed being three and a half miles an hour, as compared with a motor truck's speed of eleven miles an hour and an average operating cost of $10 a day. The exact figure of economy is ten to twenty-five per cent for motor hauling.

The service of the American Express Company presents a similar endorsement though on a much larger scale. An electric truck fleet takes care of all pick-up and delivery hauling up to thirty-five miles. For trips within that distance the Company has found electrics more economical than gasoline cars.

It was in 1908 that the first electric went into the service of this company. Today it is still doing regular duty, and according to Edward E La Schum, general superintendent of motor vehicle equipment, is exactly as efficient as the day it began. Mr La Schum says, "There is no wear out to these trucks." The next year, 1909, the company bought five more electrics, and every year since then it has bought an increasing number. Sixty-seven were purchased during the past year.

In the big garage at 218 East Forty-third Street are two hundred and sixty-two charging outlets, for trucks operating in New York City. This enables the cars to be charged during the night so that no valuable daytime is wasted.

"The best results, economically, are obtained when electrics are used in fleets," says Mr La Schum. "Then a company can maintain its own garage service and keep every little detail up to scratch. When this is done the life of a truck is practically unlimited. I believe the first cars we bought will be as good as ever for years to come. Their simplicity of operation makes them especially valuable in city hauling."

As compared with some work express trucks haven't very heavy deliveries to make. Furniture is about as heavy a commodity as has to be transported about the city, but here too electric trucks are doing good service.

The Lincoln and the Atlas storage warehouses are typical. Two years ago the Atlas Company purchased two trucks and installed a charging board in the warehouse at 157 West 124th Street. Today these two trucks are in exactly as good condition, and without having had two dollars spent for repairs. The particular feature in the trucks which the Atlas management likes is their simplicity of handling and the fact that the insurance rate on them is so low.

For the Lincoln trucks the good service record goes back even further. The first one was bought in 1907, "in order to stop killing horses," as the manager explained. The Lincoln Company handles a goodly quantity of valuable property and it was therefore most desirable that the vans be not detained on their trips late into the night as was a rather frequent happening in the days of horse trucking. With the new electric the Company found it could do work easily within the area of Greater New York and still be safely back in the garage by nightfall.

Today the electric service of the

Photographic Bureau of The New York Edison Company

The Ambulance Service of New York Hospital has a Record of 8,000 Calls a Year. On the Left is a 1909 Veteran, next a 1916 Addition to the Fleet

company consists of seven three and one-half-ton cars, and two one-ton cars. This is the entire equipment, no more horses or gasoline trucks being employed. They are garaged and charged in the warehouse at 45 East Forty-first Street. In this case again repair costs are very slight, and the original cars are doing as good work as when first bought.

The New York Hospital is another believer in the electric. The hospital has entirely done away with horse-ambulances, with the exception of one held for reserve service at the House of Relief, 67 Hudson Street.

More than eight thousand calls were answered last year by the fleet of five electrics at the uptown hospital. Says Dr Thomas Howell, superintendent, "they give very good service." The total service record of the cars is excellent also. "Big G V" is the nickname, short for General Vehicle, of the veteran ambulance which has been in active use since 1905. Today this one-ton machine is still in good condition.

Photographic Bureau of The New York Edison Company

Five Years' Service Finds this Truck in First Class Condition

In 1909 a second ambulance was added, then one in 1910 and one in 1911. When the Presbyterian Hospital gave up its emergency service its electric was sold to the New York Hospital, where it was immediately and forever after nicknamed the "Presbyterian Lansden." The latest addition to the fleet is a one-ton Commercial bought last Winter. From this newest addition to the oldest "Big G V" the cars are in good condition, and the yearly repair bills continue to be low. The hospital mechanician says that the average bill for each car is not more than twenty dollars and often less.

Photographic Bureau of The New York Edison Company

The New Detroit Electric Offers all the Charm of the Electric Car at a Price Remarkably Low

Ink

INK, glue, sealing wax and such necessities are things most persons take for granted. Everyone uses them, yet hardly one person in ten could tell how, where or from what they are made. Aleppo galls, from which ink is made, are hard nut-like growths which appear on the Dyers Oaks in Asia Minor. They are produced by an insect like the horsefly which punctures the tree and deposits its eggs; then juices gather and the nut gall grows. Natives gather them in great quantities for shipment all over the world.

Then steps in the manufacturer—and electricity. This is the force by which in most up-to-date establishments the product is manufactured. So it is with the Thaddeus Davids Company, manufacturers of ink and like products, customer of the Central Station and subject of this sketch.

In the Davids factory two horsepower motors make short work of cracking the nuts so that the tannin may be extracted by steaming and boiling in filtered water. Every particle of water used in ink making, in every process, is carefully filtered in order to have a liquid free from sediment. In this particular case a one-horsepower motor in the basement operates the filtration plant. But not satisfied with the thoroughness of this the Davids Company subjects all its finished inks to a further treatment in order to get the greatest possible clearness and eliminate all sediment or glutinous matter. This is a silk filtering process—again run by electric force. The liquid is strained through eight thicknesses of material so that it is absolutely impossible for any clogging matter to remain.

Photographic Bureau of The New York Edison Company

Subjecting Ink to a Secret Electro-Chemical Process

Tannin has proved the best foundation yet discovered for inks and various dyes; incidentally it is of high commercial value, a pint bottle being worth about $75. To this liquid are added chemicals and coloring matter and then it is subjected to an electro-chemical process, which is the trade secret of the Davids Company. In general terms it is a heating and stirring process giving a greater admixture to the color and increasing the specific gravity to four degrees Baumé. Electricity not only furnishes power to operate the machine but exerts an effect directly on the product itself. Though just how this acts is kept secret by the Davids Company, the result is known to everyone. The ink is made waterproof, the importance of which is of course great in the preservation of all kinds of records. In fires as much damage is often done by water as by flames, but when documents are written with electrochemically treated ink the writing will not blur no matter how much water reaches it.

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Filling and Sealing Tubes of Glue

Mixed with iron and coloring matter tannin makes a strong hair-dye whose largest sale is in the South among the gray-headed negroes. This curious, highly specialized market creates an almost constant demand on the Davids Company so that one large vat is required to keep a supply always on hand. Florists also use the dyes in producing some of the unusual chrysanthemums, green carnations for St. Patrick's Day, and other fantastic effects in flowers. Laundries add a few drops of carmine ink to the water and get an excellent pink dye.

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Ink is Filtered Through Eight Thicknesses of Silk

In bottle-filling a one-horsepower motor operates machines on a vacuum gang system. The saving in time and labor effected by this system as compared with the old method is incalculable. Three machines, each operated by a one-quarter-horsepower motor paste the labels on the different bottles at lightning speed, only the feeding of machines being done by hand. That ends the process of ink making. Only the work of the shipping department remains.

In the making of sealing wax by the Davids Company electricity plays its part. Shellac, the basis of the wax, is mixed with certain other ingredients by special process, and then melted and filtered to clear it of any foreign substance. This is done in six big melting pots, electrically heated. Then it is allowed to harden in big sheets until there is a call for a certain quantity and quality, when again it must be melted and made up in the forms required.

The house of Davids has a long record in the ink and stationery industry, its history dating back to 1825, when Thaddeus Davids established the business. He was the first American in an industry that had up to that time been controlled by foreign chemists.

Most of the new electrical equipment was installed in 1908 when the concern moved into its Vandam Street quarters. The total installation is approximately thirty horsepower. This includes a large electric elevator and a lighting system throughout the building. Current for the plant is supplied by The New York Edison Company.

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Labels are Pasted on the Bottles by Electric Machines

More About Dyckman House

THE old Dyckman house, described in the February issue of THE EDISON MONTHLY under the title "A Relic for Relics," and the land on which it stands were presented to New York City by descendants of the first Dyckman, Mrs Bashford Dean and Mrs Alexander McMillan Welch who had purchased the property from Mr and Mrs John H Judge.

This was done in memory of their parents, Isaac Michael Dyckman who as a boy had lived in the house, and Fannie Blackwell (Brown) Dyckman whose grandmother, Jemima Dyckman, was married there. It was under the immediate direction of Mr and Mrs Welch and Mr and Mrs Dean that the house and grounds were restored to as exact a semblance of their original condition as was possible. No detail has been spared to make the restoration perfect.

Heckscher Building

WHILE skyscrapers as a usual thing provide tenants with a whole skyful of light and air, there is no assurance in most cases that another twenty story pile won't go up alongside and exclude a big percentage of this ventilation. Indeed the unfinished side walls of most high buildings seem to anticipate such an event.

The new Heckscher Building at Madison Avenue and Forty-second Street is unusual and with reason. The average structure put up on this site would no doubt have shot up flush with the building line. This twenty-five story innovation rears its immense central tower a good twenty-five feet within the building line. Such a provision assures unlimited light and air, not until something else goes up next door, but as long as skyscrapers, and, for that matter, Forty-second Street, remain in business.

The building in design is Italian Renaissance with limestone facing on the five stories of the foundation facade. A facing of light brick with terracotta treatment has been employed for the tower that rises twenty impressive floors above this. Such is the construction of the top that tank structures and other disfigurements are entirely concealed.

Due to the fact of an abundance of light and the invariable outside arrangement of offices, the halls are found to extend but a few feet east and west beyond the elevator corridors. The elevators are five in number and of the latest high speed electrically driven Otis type.

Special attention was given to the wainscotings and floors. In fact, no building in town can be said to excel this in the beauty of these features. The floors, known as the terrazzo type, were selected only after the utmost consideration had been given to the various varieties. These polished surfaces display a harmonious gamut of shades and tints with a predominating note of green, the whole suggesting an Oriental rug. Equal attention has

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Mr Heckscher's Private Office on the Twentieth Floor of his New Building

Jardine, Hill & Murdock
Architects

Photographic Bureau of
The New York Edison Co

The Great Heckscher Building at Madison Avenue and Forty-second Street. An Edison Service User

been paid the decorative plaster work in hallways and office lobbies.

For such a building with such attractions one factor only remained to be added to its equipment. Private plant interests naturally made a great effort to induce the owner to install such apparatus. However the conspicuous good judgment that went into the construction and equipment of the building in other respects again demonstrated itself in the selection of electric service. Central Station supply was arranged for not only as the most dependable service procurable but the most inexpensive when all factors of supply and demand had been allowed for.

Make-up Secrets

A CUB reporter for a New York daily who cherished the secret ambition to watch a footlight celebrity during the period of "make-up," told his wish to a stage hand at the Hippodrome. He promptly led the scribe to a room in the basement of the building, and told him to wait.

Here, spread about upon a table was the "make-up" ready for use. The newspaper man beheld several cans of red, white and blue water color paints, a few sizeable paint brushes, a nail file that resembled a rasp, and an electric vacuum cleaner. The visitor rubbed his eyes and gasped, but presently the stars were led in. They proved to be the three big elephants of the Hippodrome troupe.

The reporter appreciated that the joke was on him, but his natural curiosity was aroused and he decided to stay and see the pachyderms made ready to face the audience. The elephants appeared hardly in a fit condition for the stage. During their morning's browsing among the hay bales they had managed to toss a few hundred weight of choice timothy over their broad backs and the expanse resembled a field of wheat stubbles. But the "make-up" man quickly altered their appearance by connecting the vacuum cleaner to a nearby wall socket and applying the floor tool to the wrinkled hide. In the time it takes to go over a 9x12 rug the animals were cleaned and ready for the finishing touches. These were applied by means of the paint brushes, and then when their toe-nails had been filed and polished they were ready for the curtain call.

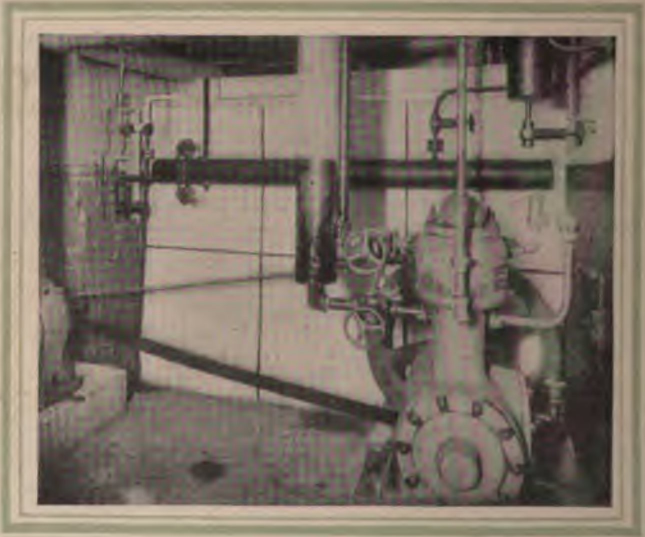
Current Refrigeration

LAST month's issue of The Edison Monthly referred under the title "History on Ice" to various methods of refrigeration and ice making employed in more or less historic times. A glimpse of modern electrical methods herewith presented suggests the advantages of ice and temperature thus secured. Not least among these benefits is the uniform purity of electrically made ice as compared with the uncertain quality of the natural article. The most insidious disease germs are *not* destroyed by freezing, and all too often "diseased" ice put in otherwise pure drinking water has been responsible for disastrous epidemics. Furthermore, the dependability and uniform quality of artificial ice supply is proving a factor in housekeeping efficiency and economy appreciated keenly by the innumerable residential districts today supplied from this source.

The manufacture of ice from distilled water has been long familiar to readers interested in the modern refrigerating industry. Of late large commercial plants have been developed for the freezing of raw water. Ice of this type lends itself with great readiness to manufacture by Central Station power, as neither boilers nor heat are required in the process.

Such a plant is now operated by the Community Ice Company at 1350 Stebbins Avenue, the Bronx. The main compartment of the operating area shows a broad empty room, its floor cut up into what appear to be big paving blocks of wood. On one of these blocks being lifted, the space beneath reveals a filled ice container, the cake clear and all but complete. No less than 1,500 of these cans are set at one time in the immense brine bank that reaches under the platform.

With the brine at fifteen degrees, approximately fifty hours are needed to produce a 300-pound cake. In the meanwhile the process looks to the efforts of four motor driven agita-



The Three-ton Plant in the Restaurant of the Margaret Louisa Home was Installed under the Direction of Charles H Higgins, Architect

Photographic Bureau of The New York Edison Company

Freezing Room of the Community Ice Company Showing Ice Cans Sunk in Great Brine Tank

tors or paddle devices set one at each corner of the big tank, the contents of which are thus kept continually in motion.

The center or core of the ice block is blown out when nearly frozen and the space filled with fresh water. This is done in order to remove impurities that are forced to the center of the cake by the action of a blower in the early stages of the freezing. The common impurities found are sodium and potassium salts, lime and magnesia. The half frozen core containing these is drawn out with great care, and the water substituted freezes quickly to the prevailing clearness of the cake.

Getting the ice block out of its metal container is accomplished by immersion in a tank of water maintained at sixty degrees. A few moments in this temperature serves to melt a thin film between the ice and the metal of the can. This done, the can is set in an ingenious tilting rack or ice dump, one operation of which slides the cake free.

Propelled down a stout wooden chute, the block finds itself in storage quarters. The room, heavily doored and insulated, adjoins the freezing compartment, but due to the growth of the business is hardly large enough to meet present demands. Such space as is now employed is filled with the ice, the clearness and flawlessness of which shows up even more plainly than in the freezing room. As re-

Photographic Bureau of The New York Edison Company

The Compressors for Ammonia Distribution are Operated by Individual Motors

gards Central Station Service, the actual saving in an otherwise initial expense for engines is evident to one familiar with power apparatus in industry in general. Not only are engines and their various accessories lacking but the usual hurrying about of a force of operators and mechanics is surprisingly minus. The coal pile of this well ordered establishment is discovered in a nearby room—three electrical transformers.

A special ice-manufacturing rate lately established by the Central Station has made the use of other motive power rather out of the question. This rate was found possible owing to the demands for current in the factory during what are known as "valleys" in the curve of the generating station's output.

Probably the most remarkable instance of artificial ice making is that afforded by the "Flirting at St Moritz" feature of the Hippodrome Company now on the road. This necessitates a rink forty-five by thirty-feet with ice four inches thick. The problem was worked out by the adoption of portable electric freezing units, each of which is mounted on a skid or stand. By this means when the performance closes it is only necessary to take down the piping, haul the different pieces of apparatus on a truck, pack them into a car, and ship them to the next town. To prevent the loss of time required to erect the plant and freeze the water, a twenty-four hour process, duplicate outfits are used. While one is working in one city the other is being set up at the next point.

Each plant consists of a 10-ton compressor driven by a twenty horse-power direct current Westinghouse motor, and a 60 kilowatt motor generator set. The motors are operated wherever direct current is available. Where alternating current only is to be had, the motor generator set is called into service. The big brine tank has a capacity of 1,900 gallons.

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The Big Plant of the Knickerbocker Ice Company on Broome Street. Oil Engines were Displaced Here by Edison Service

However, the mission of electricity in modern refrigeration does not stop with the making of ice. There are on the market at present not one but

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The Refrigerator in the Kitchen of the Guaranty Trust Company Uses Ethyl-Chloride as the Refrigerant

many electric refrigerators that fulfil their duties with no ice at all. These devices which are designed for general use are regulated to maintain a constant temperature and run for from one to three years without the adjustment or renewal of chemicals. Ethyl-chloride is the refrigerant. Of several sizes available, that producing the cooling effect of some 150 pounds of ice appears to be the most in demand.

Aside from domestic use, electric refrigeration is proving itself indispensable for industrial purposes. The avoidance of ice handling and its wasteful expense is manifest to the public at large in such an institution as Washington Market. Where formerly ten tons of ice had daily to be dragged through the aisles and distributed among the stalls, pipes now radiate from an electrical refrigerating plant at one corner. The indirect system is used—that is, ammonia after compression is expanded in a brine tank and the cold brine circulated through the market.

An instance more unusual is that of fur storage. The refrigerating agent is piped through the fur filled rooms of these establishments, maintaining a temperature, free from dampness, that is sufficient to insure the destruction of any moth embryos that may have lodged in the fur.

The employment of such refrigeration in the great warehouses that line the city waterfronts is a further illustration, and on a gigantic scale, of the efficiency of the new cooling method in the preservation of provisions of all descriptions which occur in the vicinity of the big markets. These establishments accept goods either for "holding" in a moderate temperature or for actual freezing. The rate of charge is by the square foot. Incidentally the capacity of a typical warehouse of this description is a great surprise to one to whom such refrigerating service and its patronage may be more or less unfamiliar.

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View of Shayne Fur Storage Rooms Electrically Refrigerated

Manufacturers and Agents (Continued)

Motors

General Uses

Allis-Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Dudley-Curry Elec Co—154 Nassau St
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Imperial Elec Co (Watson)—253 Broadway
Lincoln Electric Co—149 Broadway
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Harlem Electric Co—6 E 116th St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Leve Robert E—19 E 32d St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
Russell & Co—56 W 45th St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Allan-Bradley Co—50 Church St
Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St
Ward Leonard Electric Co—Mount Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St
Klein & Co—208 Centre St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Madison Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St

Refrigeration

Automatic Refrigerating Co—50 East 42d St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Madison Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

B & B Sign Company—347 Fifth Ave
Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—649 W 43d St
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—218 West 20th St
Manheimer Co The—162 W 34th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—Broadway and Herald Sq
National Elec Sign Co—61 Hudson St Jersey City N J
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—344 Broome St
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Snow & Co—531 W 46th St
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St
Wertheimer Sign Co—558 W 36th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—511 W 42d St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—76 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—371 Broadway
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro-Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Bromley-Merseles Mfg Co Dishwashing Machines)—1328 Broadway
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 Broadway
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Shelton Electric Co—30 E 42d St
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
Ward Leonard Electric Co—Mount Vernon N Y
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—35 Vestry St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Avenue
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Innovation Electric Co—585 Hudson St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker Metal Furniture Co—255 Canal St
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Elec Co—463 West St and 105 W 40th St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cataract—46 E 41st St
Home Devices Corp (Modern)—Bush Terminal Brooklyn
Hurley Machine Co—147-157 W 42d St
National Sewing Machine Co—290 Broadway
Northwestern Electric Equipment Co (Geyser)—35 Vestry St
Sibley-Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Elec Co—105 W 40th St and 463 West St

Welders

Welding Materials Co—114 Liberty St
Westinghouse Electric & Mfg Co—165 Broadway
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Cons Co
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Canal St 313—Oneida Electric Co
Canal St 417—G E Engineering Co
Canal St 417—The Maintenance Co
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eight Ave 461—A J Buschmann Co
Eighth Ave 461—Edward B Stott & Co
Eighth Ave 766—H Lauer & Co
Fifth Ave 75—H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Liberty St 120—Watson-Flagg Engineering Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 819—Thomas Hindley & Son
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Elec Co
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Elec Cont Co
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Elec Construction Co
West 31st St 109—Jandous Elec Equip Co Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—N Y Elec Installation Co
West 38th St 39-41—Dennis G Brussel
West 40th St 337—William W Ritchie
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 56—Russell & Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 243—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Mfg Co

East of Broadway and Fifth Avenue

Beekman St 74—Jordan Bros Const Co
Bible House 78—Thos C Miller
Beaver St 42—Hanover Elect Co
Broome St 114—B H Weinberg
Broome St 434—The Globe Electric Contracting & Repairing Company
Cedar St 16—Wm Truswell & Son
Chrystie St 155—A Fox
Dover St 8—Hazazer Electric Co Inc
East Houston St 93—I Berkowitz
East 3d St 48—B Ackerman Co
East 3d St 136—H A Schreiber
East 5th St 416—Frank Bloom
East 8th St 4—J M Smith & Son
East 8th St 48—American Pressing Iron Co
East 15th St 6—Geo D Beinert Inc

Department Stores which Sell Electric Appliances

Adams-Flanigan Co—Westchester & Third Ave Bronx Basement
Barnett Bros—Columbus Ave & 74th St Basement
*Bloomingdale Bros—59th St & Third Ave Basement
John Daniell Sons—759 Broadway Basement
*Gimbel Bros—6th Ave & 33d St Fifth Floor
*J B Greenhut & Co—6th Ave & 18th St Basement
H C F Koch & Co—132 W 125th St Basement
Lewis & Conger—Sixth Ave & 45th St First Floor
Liggett-Riker-Hegeman Drug Stores
*Lord & Taylor—5th Ave & 38th St Fifth Floor
*James McCreery—5 W 34th St Sixth Floor
*R H Macy & Co—Broadway & 35th St Basement
Rothenberg & Co—34 W 14th St Basement
Stern Bros—41 W 42d St Fourth Floor
*John Wanamaker—Broadway & 10th St Seventh Floor

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*These stores maintain special electrical departments where wide varieties of electric household appliances are always displayed.

Manufacturers and Agents

Arc Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
General Electric Co—30 Church St
General Illuminating Co—369 Broadway
Hallberg J H—38 E 23d St
Kandem Electric Co Inc—49 E 21st St
Stave Electrical Co—131 Hudson St
Western Elec Co—463 West St and 105 West 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Wohl M J & Co—211 Fulton St Brooklyn N Y

Mercury Vapor Lamps

Cooper-Hewitt Elec Co—730 Grand Street Hoboken N J
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Automobiles

C—Commercial I—Industrial P—Passenger

Anderson Electric Car Co of N Y (Detroit Electric)—Central Park West at 62d St (C & P)
Atlantic Elec Vehicle Co—52 Vanderbilt Ave (C)
Automatic Transportation Co—258 B'way (I)
Baker R & L New York Corporation The—Central Park West at 62d St (P)
Buda Co of Chicago—30 Church St (I)
Comm'l Truck Co of America—30 E 42d St (C)
Couple Gear Co—(Clarence L Smith Co Agents)—544 W 30th St (C)
Cowan Truck Co—114 Liberty St (I)
Electric Automobile Sales Corp—Times Bldg (C)
Electro Coach Corp—30 Church St (Busses)
Elwell-Parker Electric Co (Lucian C & G W Brown Agts)—50 Church St (I)
Field Omnibus Co—149 Broadway (Busses)
General Vehicle Co—30 East 42d St (C) (I)
Healey & Co—Broadway and 51st St (P)
Hoagland-Thayer Inc—383 Halsey Street Newark N J (I)
Hunt Co C W Inc—61 Broadway (I)
Lansden Co Inc The—Flatbush & Nostrand Aves Brooklyn (C)
Lansing Co—288-9 West St (I)
Mercury Mfg Co—(Truck & Tractor Co Agents) 25 Church St
Ohio Electric Car Co (Robt W Schuette Agent)—236 West 54th St (P)
Orenstein-Arthur Koppel Co—30 Church St (I)
Walker Vehicle Co—Grand Central Terminal Room 3709 (C)
Ward Motor Vehicle Co—Mt Vernon N Y (C)

Charging Apparatus

Allen-Bradley Co—50 Church St
Cutler-Hammer Mfg Co—50 Church St
Eck Dynamo & Motor Co—Belleville N J
Electric Products Co The—30 E 42d St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Lincoln Electric Co—149 Broadway
Northwestern Electric Co The—1457-63 B'way
Wagner Electric Mfg Co—30 Church St
Ward Leonard Electric Co—Mt Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Charging Apparatus for Ignition, Starting and Lighting Batteries

Allen-Bradley Co—50 Church St
Cutler-Hammer Mfg Co—50 Church St
Eck Dynamo & Motor Co—Belleville N J
Edison Thomas A Inc—141 Lakeside Ave Orange N J
Electric Products Co—30 E 42d St
General Electric Co—30 Church St
Lincoln Electric Co—149 Broadway
Robbins & Myers Co—30 Church St
Wagner Electric Mfg Co—50 Church St
Ward Leonard Electric Co—Mt Vernon N Y
Westinghouse Electric & Manufacturing Co—165 Broadway

Mechanical and Battery Parts

Anderson Electric Car Co—Central Park West at 62d St
Anderson Mfg Co Albert & J M—135 Broadway
Baker R & L New York Corporation The—Central Park West at 62d St
Edison Storage Battery Co—204-206 W 76th St
Electric Garage—Central Park West & 62d St
Electric Storage Battery Co The—100 B'way
Exide Battery Depots Inc—2 West End Ave and 64th St
Gassaway F S Inc—212 E 54th St
General Lead Batteries Co—1790 Broadway
Gould Storage Battery Co The—30 E 42 St
Phila Storage Battery Co—American Building Broadway and 58th St
Storage Battery Supply Co—239 East 27th St

Manufacturers and Agents (Continued)

Mechanical and Battery Parts (Concluded)

Walker Vehicle Co—531 W 46th St
Willard Storage Bat Co The—228-30 W 58th St

Buffers—Polishers

Fort Wayne Electric Works of the General Electric—Co—30 Church St
General Electric Co—30 Church St
Green Electric Co The W—81 Nassau St
Holtzer-Cabot Electric Co—83 Warren St
Munning-Loeb Co—Canal & Sullivan Streets
Robbins & Myers Co The—30 Church St
Westinghouse Elec & Mfg Co—165 Broadway

Clocks—Time Stamps and Recorders

Holtzer-Cabot Electric Co—83 Warren St
Howard Electric Clock Co—Maiden Lane & William St
Walker Bros & Haviland—50 Church St

Coffee Mills

Canton Electric Cut Co—11 E 125th St
Coles Mfg Co—419 Long Beach Bldg
Deer Co A J—55 West 63d St
Hobart Mfg Co Inc The—24 East 21st St
Howe Scale Co of N Y The—341 Broadway
Jacobs Bros Co Inc—78 Warren St

Drills and Grinders (Portable)

Chicago Pneumatic Tool Co—52 Vanderbilt Ave
Cincinnati Electrical Tool Co—50 Church St
Electro-Magnetic Tool Co—426 Broome St
Hisey Wolf Machine Co—50 Church St
Standard Electric Tool Co—30 Church St
United States Electrical Co—50 Church St
Van Dorn Electrical Tool Co—30 Church St

Electro-Therapeutic and Dental Apparatus

American Sterilizer Co—Erie Pa
American X-Ray Equip Co—401-405 E 31st St
Edmonds Walter S—134 Congress St Boston Mass
General Acoustic Co—Acousticon for the Deaf 220 W 42d St
Hanovia Chemical & Mfg Co—30 Church St
Harper Oriphone Co (Instruments for the Deaf)—303-305 Fifth Avenue
Hospital Supply Co The—53-55 Fifth Avenue
Hotpoint Elec Heating Co—147 Waverly Pl
Hughes Co The J W—110 E 23d St
Johns-Manville Co H W—41st St & Madison Ave
Kny-Scheerer Co The—404-410 West 27th St
MacAlaster Wiggin Co—66 Broadway Cambridge Mass
Meyrowitz E B Inc—237 Fifth Ave
Metropolitan Eng Co—35 Vestry St
Neel-Armstrong Co—29 W 34th St
Pelton & Crane Co—Detroit Michigan
Pittsburgh Electric Specialties Co—412 Eighth Ave (lamps only)
Prometheus Elec Co The—232 E 43d St
Ritter Dental Mfg Co—Fifth Ave Building
Sanax Co Inc The—125 E 23d St
Shelton Elec Co—30 W 42d St
Simplex Electric Heating Co—120 W 32d St
Sorensen C N Co Inc—177 E 87th St
Tiemann Co George—107 E 28th St 107 Park Row
Trenaman Dental Mfg Co—107 W 25th St
Victor Electric Co—110 E 23d St
Vioray Mfg Co—915 Whitlock Ave Bronx
Waite & Bartlett Mfg Co—252-258 W 29th St
Wappler Elec Mfg Co Inc—173 E 87th St
Westinghouse Electric & Mfg Co—165 B'way
White Dental Mfg Co S S—5 Union Square
Williams Roger—120 W 32d St
Wolff Co Wm F—501 W 145th St

Elevators—Dumbwaiters

American Elevator Co—117 Cedar St
Burdett-Rowntree Mfg Co—119 W 40th St
Burwak Elevator Co—216 Fulton St
Dowdall Chas E Inc—152 W Broadway
General Elevator Co—29 Broadway
Gurney Elevator Co—62-64 W 45th St
Jordon Bros Inc—74 Beekman St
Maintenance Co The—417-421 Canal St
National Elevator Co—62-64 W 45th St
New York Elevator Co—50 Grand St
Otis Elevator Co—11th Ave and 26th St
Reedy Elevator Co—202 Ninth Ave
Roberts Elevator Co Jas H—430 W Broadway
Sedgwick Machine Works—128 Liberty St
See Elec Elevator Co A B—220 Broadway
Warner Elev Mfg Co—113 Warren St
Warsaw Elevator Co—216 Fulton St
Wheeler McDowell Elev Co—417 Canal St

Fans, Blowers and Air Compressors

Allis-Chalmers Co—50 Church St
American Blower Co—141 Broadway
Beach-Russ Co—220 Broadway
Brunner Mfg Co—30 Church St
Century Electric Co—30 Church St
Clayton Air Compressor Works—115 Broadway
Curtis & Carhart Inc—150 Chambers St
Curtis Pneumatic Machinery Co—30 Church St
Diehl Mfg Co—149 Broadway
Eck Dynamo & Motor Co—46 W Broadway
Federal Sign System (Electric)—649 W 43d St
Garner Ventilating Co—136 Liberty St
General Electric Co—30 Church St
Gerdes Theo R N—123 Liberty St
Hunter Fan & Motor Co—114-118 Liberty St
Ilg Elec Vent Co—13 Park Row
Kandem Electric Co Inc—49 E 21st St
Kinetic Engineering Co—41 Park Row
Koithan & Pryor—39 Cortlandt St
Kragh C W—184 Hudson Ave
Laidlaw-Dunn-Gordon Co—115 Broadway
Manhattan Electrical Supply Co—17 Park Place 110 West 42d St, 127 West 125th St
Marelli & Ercole Co—309 Broadway
National Brake & Elec Co—165 Broadway
Robbins & Myers Co The—30 Church St
Smucker Arthur C—30 Church St
Sorensen Co Inc C M—177 East 87th St
Sprague Electric Works—527 W 34th St
Strauss L L (For Rent)—74 W 125th St

Manufacturers and Agents (Continued)

Fans, Blowers, Air Compressors (Concluded)

Sturtevant B F Co—50 Church St
Typhoon Fan Company—1544 Broadway
Western Elec Co—463 West St & 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway
Westinghouse Traction Brake Co—165 B'way
Wing L J Mfg Co—352-362 W 13th St

Fire Alarm Systems (Interior)

Auto Call Co—30 Church St
Automatic Fire Alarm Co—416 Broadway
Edwards Co—Exterior St Bronx
Leveridge Chas W Inc—133 Liberty St
Metropolitan Elec Protective Co—130 W 26th St
Ostrander & Co W R—22 Dey St
U S E M Co—221 West 33rd St

Fixtures and Portables

Adams Bagnall Co—30 Church St
Bayley & Sons Inc—101 Park Ave
Benjamin Electric Mfg Co—114 Liberty St
Black & Boyd—17 E 47th St
Caldwell Co Edward F—36-40 West 15th St
Dale Lighting Fixture Co Inc—107-9 W 13th St
Federal Sign System (Electric)—649 W 43rd St
Findlay Mfg Co Robt—28 Warren St
Falkenbach Mfg Co The—159 E 54th St
Fox Electrical Corporation—119 W 42d St
Gleason Mfg Co E P—37 Murray St
Goetz A E—55 Barclay St
Harlem Gas & Elec Fix Co—157-59 E 128th St
Heather Co The R C—19-21 W 36th St
Kandem Electric Co Inc—49 E 21st St
Lighting Studios Co—220 W 42d St
Livingston & Co J Inc—70 East 45th St
McFaddin & Co H G—38 Warren St
McHugh & Son Joseph P—9 West 42d St
Mayer & Co Leon—1304 Boston Road
Metropolitan Elec Supply Co—126 W 36th St
Miller & Co Edward—68-70 Park Place
Mitchell Vance Co The—294 Madison Ave
Morris Iron Works Elmer P—136 Liberty St
National X-Ray Reflector Co—21 W 46th St
N Y Gas & Elec Appliance Co—569-571 B'way
Parker Co The Chas—32 Warren St
Pittsburgh Lamp Brass & Glass Co—35 W 23d St
Roeser & Heidelberger Inc—54 W 37th St
Shapiro & Aronson—20 Warren St
Sibley & Pitman—19-21 W 36th St
Silvestro C—4149 Park Ave Bronx
Simes Co The—20 Rose St
Sommer Lighting Fixture Co Inc—386 Second Ave
Standard Lighting Fixture Co—61 Warburton Ave Yonkers N Y
Sterling Bronze Co—18 East 40th St
"Vase-Kraft" Studio—333 Fourth Avenue
Wahle, Phillips Co—Park Ave & 40th St
Walter G E—157 East 44th St
Western Elec Co—463 West St and 105 W 40th St

Street Fixtures

Central Foundry Co—90 West St
Fox & Co John—253 Broadway
General Electric Co—30 Church St
Morris Iron Works Inc E P—136 Liberty St
Mott Iron Works J L—118 Fifth Ave
Westinghouse Electric & Mfg Co—165 B'way

Globes—Reflectors

Dealing William—1 Hudson St
Fox Elec Corp The—119 W 42d St
Frink I P—24th St & 10th Ave
Gillender & Sons Inc—19 Madison Ave
Gleason-Tiebout Glass Co—200 Fifth Ave
Haskins Glass Co—98 Park Pl
Holophane Glass Co Inc—340 Madison Ave
Hubbell Harvey Inc—30 East 42d St
"Ivanhoe-Regent Works" of the General Elect Company—105 W 40th St
Jefferson Glass Co—220 W 42d St
Lighting Studios Co—220 W 42d St
Macbeth-Evans Glass Co—143 Madison Ave
Morgan & Sons John—61 East 9th St
Northwood Co H—19 Madison Ave
Organ Arthur—114 Liberty St
Phoenix Glass Co—230 Fifth Ave
Harry Pickhardt—98 Park Place
Pittsb'g Lamp Brass & Glass Co—35-37 W 23d St
Straight Filament Lamp Co—42 E 23d St
Weeks Nelson—214 State St Brooklyn N Y
Wilkinson Co—93 Underhill Ave Brooklyn N Y

Heating and Cooking

American Elec Heater Co—Detroit, Michigan
Bohn Elec Co C C—820 6th Ave
Cutler-Hammer Mfg Co The—144th St and Southern Boulevard
Dover Mfg Co—30 Church St
Federal Sign System (Electric)—649 W 43d St
Fox Electrical Corporation—119 W 42d St
General Electric Co—30 Church St
Hotpoint Electric Heating Co—147 Waverly Pl
Hughes Electric Heating Co—Chicago Ill
Johns-Manville Co The H W (Heating Pads) 41st St and Madison Ave
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St, 127 West 125th St
Metropolitan Elec Prod Co Inc—101 W 42d St
National Elec Utilities Corp—103 Park Ave
Pelouze Mfg Co—32 Park Place
Phelps Mfg Co—2 Astor Place
Pittsburgh Elec Specialites Co—412 8th Ave
Prometheus Electric Co The—232 E 43d St
Reimers Mfg Co—130 Church St
Sibley-Pitman Elec Corp—19-21 W 36th St
Simplex Electric Heating Co—120 W 32d St
Western Elec Co—463 West St and 105 W 40th St
Wicks Electric Co—Cleveland Ohio
Williams Roger—120 West 32d St
Westinghouse Elec & Mfg Co—165 Broadway
Wood Electric Co C D—441 Broadway

Ironing Machines

American Ironing Machine Co—46 E 41st St
Bergbom & Roberg—46 E 41st St
Wallace B Hart (Simplex) (Roma)—46 E 41st St
Hurley Machine Co—147 W 42d St

Horse Clippers

Gillette Clipping Machine Co—110 W 32d St

Low Voltage Direct Current Bell Ringers

U S E M Co—301 West 37th St

(Continued on last four pages)

The New York Edison Company

General Offices
Irving Place & 15th St
Telephone Stuyvesant 5600

BRANCH OFFICES	*TELEPHONE*
424 Broadway	Canal 8600
126 Delancey St	Orchard 1960
10 Irving Place	Stuyvesant 5600
124 W 42d St	Bryant 5262
151 East 86th St	Lenox 7780
15 East 125th St	Harlem 4020
362 East 149th St	Melrose 9900

All showrooms open until midnight

EMERGENCY NIGHT AND SUNDAY CALL—FARRAGUT 3000

Territory Served by the Various Supply Offices

Broadway District, with offices at 424 Broadway—Telephone Canal 8600—includes the territory south of Christopher and Eighth Sts, west of the Bowery and south of Catharine St

Delancey Street District, with offices at 126 Delancey Street—Telephone Orchard 1960—includes the territory south of Eighth Street, east of and including the Bowery, and north of and including Catharine Street

Irving Place District, with offices at 10 Irving Place—Telephone Stuyvesant 5600—covers the territory between and includes Eighth Street and Twenty-eighth Street from the East to North Rivers

Forty-second Street District, with offices at 124 West 42nd Street—Telephone Bryant 5262—includes the territory north of Twenty-eighth Street to and including Fifty-ninth Street from the East to North Rivers

East Eighty-sixth Street District, with offices at 151 East 86th Street—Telephone Lenox 7780—includes the territory lying north of Fifty-ninth Street and South of One Hundred and Tenth Street, east of Central Park

Harlem District, with offices at 27 East 125th Street—Telephone Harlem 4020—includes the territory bounded by the North River, Fifty-ninth Street, Central Park, One Hundred and Tenth Street, East River to and including One Hundred and Thirty-sixth Street east of St Nicholas Avenue, and to the south side of One Hundred and Thirty-fifth Street west of St Nicholas Avenue

Bronx District, with offices at 362 East 149th Street—Telephone Melrose 9900—includes the territory bounded on the north by Yonkers City Line, on the east by the Bronx River, on the south by the East and Harlem Rivers, on the west by the Harlem River to Spuyten Duyvil; north of Spuyten Duyvil by the Hudson River

"At Your Service"

Main Street and Boulevard, Astoria

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JOSEPH WILLIAMS, Treasurer
LEWIS B GAWTRY, Secretary

"No historian," writes one of their number, "believes that history repeats itself. Yet between different ages there are frequently striking analogies and resemblances. It is problems that repeat themselves, not the conditions that determine their solution."

A case in point is the employment of scientists and lay-experts in military and naval affairs. When the Navy Department at Washington announced the formation of the present Naval Consulting Board made up of this country's leading scientists and inventors, many assumed that the administration was making a notable departure from precedent.

* * *

Yet, history will assure us that in taking this action navy officials were following literally in the footsteps of President Lincoln. At the outbreak of the Civil War, the authorities felt the need of securing the very best scientific opinion on matters relating to military operations and to navigation. Thereupon a commission was appointed to examine into all "investigations and experiments" bearing on the subject. Looking into the personnel of this body, a further parallelism is discovered. As everyone knows, the chairman of the present naval consulting board is Thomas A Edison, the foremost electrical scientist of today; during the Civil War the man in charge of this group of non-military experts was Joseph Henry, then in his turn, the country's foremost electrical man.

* * *

A great many of the people who have heard of Henry, think of him only as an abstruse scientist, dealing merely in theories. They do not realize how much of patriotic labor he contributed to his country. During the entire Civil War Henry was in Washington, serving as secretary for the Smithsonian Institution, and many of the commission's investigations were carried on in the institution building.

* * *

A problem of the greatest importance at the time arose from the lack of adequate methods of signalling. Readers must remember that this was long before the days of elaborate field telegraph and telephone sets, to say nothing of wireless, and the army was practically dependent on systems of light signalling.

Much of the scientists' efforts were spent on this subject, the tall tower of the Smithsonian being used for the experiments. Night after night, the flashing went on as this, that and the other system and medium were tried. Frequently, too, President Lincoln, unable to sleep in the midst of the difficulties pressing upon him, would join the watchers on the tower, according to the Smithsonian records, "glad to leave the scene of turmoil in which his days were passed, and to seek rest and inspiration" in the companionship of Henry and his co-laborers who worked with a devotion equalled only by that of the Navy Board of the present emergency.

◆

It is hardly probable that the taking over of the trucks and horses of industry and commerce to meet the needs of war will have the same disorganizing effect on transportation in our country as that which followed the commandeering of such vehicles in England in the summer of 1914.

As told elsewhere in this issue the commandeering of private motor trucks by the English government at the outbreak of the war all but paralyzed commerce in the cities. Gasoline trucks and draught horses were taken for the army—all other considerations were secondary. This left the cities practically without any facilities for moving goods. And it has been only within the past few months that England has begun to recover.

The remedy for demoralized transportation was found in the electric truck, a type of vehicle with which England was not entirely unfamiliar. Some of the city concerns and a few municipalities were using them. But in all England there were less than two hundred at the outbreak of the war. Today there are nearly a thousand and they are serving in practically every branch of industry.

◆

What happened in England will also happen in our own country. The recruiting of a huge army, the movement of National Guard regiments and the sending of a force to Europe when that step is taken, will mean that great numbers of automobiles will be required. To meet this situation, the Government will probably do as the English government did, purchase what it can from manufacturers and commandeer private vehicles to meet any shortage.

Fortunately, though, the inconvenience will not be as great as it was in England, for there are many thousands of storage battery vehicles in the service of our cities. New York alone is operating more than 2,500 electric trucks and delivery wagons and 200 industrial trucks at the freight stations, and these should be more than sufficient to maintain such deliveries as will be necessary.

◆

The fact that electrics are not used for work on the battlefield is in entire keeping with the claims of the manufacturers of the storage battery automobile. They have never asserted that the electric truck or wagon was designed for long trips into the country such as wagons of the army transport must make. Rather the claim has always been advanced that electrics give their best work in cities and nearby suburbs—a claim which is well supported by facts, as THE EDISON MONTHLY has had occasion to point out many times. It is this prosaic but very essential work that electrics will be expected to perform when their more spectacular cousins are called to the front. In their respective fields the gasoline car and the electric will each be found carrying a very large part of the industrial and military burden of the country at war.

Oral Flag Salute

"I pledge allegiance to my flag and to the Republic for which it stands;
One nation, indivisible, with liberty and justice for all."

Stars and Stripes

is the official name of the National Flag of the United States. In the Army our National Flag is called the Standard, also the Colors. When borne with another flag, the regimental color, the two flags are called a "Stand of Colors." In the Navy our National Flag is known as the U. S. Ensign.

Display

The flag should not be hoisted before sunrise nor allowed to remain up after sunset.

When the Flag is flown at half staff as a sign of mourning, it should be hoisted to full staff at the conclusion of the funeral.

In placing the Flag at half staff, it should first be hoisted to the top of the staff and then lowered to position, dropping it from the top of the staff the distance of the width of the Flag, and preliminary to lowering from half staff, it should first be raised to the top.

On shipboard the National Flag is the flag to be raised first and lowered last.

Where several flags are displayed on poles with the National Flag, the Stars and Stripes should be hoisted first and on the tallest and most conspicuous staff. Where two flags are displayed, one our National Flag, it should be placed on the right. (To ascertain the right of a building, face in the same direction as the building.) No flag should ever be flown from the same staff as the U. S. Flag, except in the Navy; then only during Divine Service, when the Church Pennant may be displayed above the National Flag—God above Country.

When, in parade, the National Flag is carried with any other flag, it should have the place of honor, at the right. If a number of flags are carried, the National Flag should either precede the others or be carried in the center, above the others, on a higher staff.

When flags are used in unveiling a monument, tablet or statue, they should not fall to the ground, but be carried aloft, forming a distinctive feature of the ceremony.

When the National Flag is used as a banner the union should be at the right (as you face the Flag). When used as an altar covering, the union is at the right (as you face the altar), and nothing should ever be placed upon the Flag except the Holy Bible.

The Flag should never be flown reversed except in distress at sea.

Salute

When the National Colors are passing in parade or in review, the spectator should, if walking, halt, and if sitting, arise and stand at "attention" and uncover.

The National Salute is one gun for every State.

The International Salute is, under the Law of Nations, twenty-one guns.

On shore the Flag should not be dipped by way of salute or compliment.

Copyright by Annin & Company

Decoration by C B Falls

After Betsy Ross

TO MANY the mention of "Old Glory Corner" suggests staid old Philadelphia of a century and a half ago, and Betsy Ross, and General Washington and the rest of the Revolutionary notables. But reference is not to these. The subject of this sketch is New York's "Old Glory Corner."

Many a famous old battle-flag has been made here in New York. The colors that were carried into Mexico back in the days of '47; that floated above the Alamo and conquered Southern California; the battle-flags and banners of the Union Army and Navy and the volunteer forces of the Civil War; the first flags to go into Cuba, the Hawaiian Islands, the Philippines; and the flag that reached the North Pole with Commander Robert E Peary—all these and many others were made in the four-story red brick building at William and Fulton streets which houses the establishment of Annin and Company. It is this establishment and the industry it houses which long ago created the name "Old Glory Corner."

With so many honorable associations there can be little doubt but that the plain brick building well deserves the name it has been given. Since the days of Betsy Ross no one building in America has sheltered so many pieces of bunting destined to gain historical interest, and certain it is that no one building in the country has contained so many flags during the course of its existence.

At the rate of 10,000 flags a day Annin and Company have been manufacturing the Stars and Stripes for the past seventy years, and from all present appearances the firm expects to continue the same tremendous business for years to come. Big flags and little flags, silk flags, felt flags and bunting, packed singly or in bales, are sent from the shipping room of the red brick building every day. Long since, "Old Glory Corner" has become overcrowded with seamstresses and machines and the walls of the adjoining building have been cut through, until the corner could well be called "Old Glory Block," so large has the establishment grown. In truth lofts have been opened in another part of William street to accommodate batteries of sewing machines devoted entirely to the work of sewing stripes of the flag together.

Motors Used in Flag Manufacture

In this huge task of flag making hundreds of motor driven sewing machines are used. On one floor a score of machines are kept busy working on Union Jacks alone. These blue fields are spangled with the forty-eight stars by the ever active needles. On another floor another battery sews the red and white stripes together, thousands of yards a day being run through the machines, while on still another floor the unions and stripes are put together and the hemming is done.

The first step in the manufacture of "Old Glory" is the cutting of the bunting. This material arrives from the mills in rolls of several hundred yards. It is difficult to estimate the number of yards of bunting that annually pass into the receiving department and out of the shipping room as completed flags, but when it is considered that more than three million American flags alone are made here each year it can readily be seen that millions of yards of material are used.

The stripes are cut alternately, first red, then white, at a surprising rate of speed. In the meantime big sections of white bunting are taken to the stamping machines or punch presses. The material in this case is folded into forty-eight sections and passed through the machine. At each operation the keen steel die cuts the stars for one complete flag. In another section of the factory the blue bunting is being cut to the proper size for fields. In this work whirring electrical cloth cutters are used, for the blue fields are cut in bulk, hundreds of them being made at a single cutting.

The products of this room along with the stars from the punch press are sent to a room in which a score or more of busy girls pin or baste the recently cut stars upon the blue. As fast as these are ready they are sent to the seamstresses, who by the skilled manipulation of the special sewing machines with which the Annin factory is equipped, stitch the stars on the field. All of the Annin factory machines are of special design and as a result of their electrical equipment are capable of turning out an incredible quantity of work a day. Each machine is able to speed up to twenty-four hundred lock stitches a minute.

The sewing on flags must be especially strong, particularly in connection with the stripes, for they must be able to withstand the whipping of the winds. The machines used are equipped with great spools of thread which contain twenty-four thousand yards each. This is fed in with lightning swiftness, and the sewing is thus done very accurately with never a "skip" or "drop" stitch to be accounted for. Indeed there cannot be, for when the Annin firm is manufacturing flags for the Government the inspectors are particularly careful about the stitches and if there are not a specified number of perfect stitches to every inch the flag is

Photographic Bureau of The New York Edison Company

In the Art Department where Thousands of Curious and Interesting Standards are Designed Annually not accepted for the use of Uncle Sam.

Besides making flags for the Government the Annin Company does a huge business in flag making for private purposes. An instance is furnished in the number of flags that were made for the Preparedness Parade in the Spring of 1916. The Annin Company made 97,000 flags for this occasion. The campaign parades in the Fall of last year also furnished a source of big business for the flag makers of "Old Glory Corner." Great quantities of small standards were manufactured, many of which had an interesting electrical feature in that they were equipped with tiny electric lamps on the top of the staff, the current being provided by means of a battery carried in the marcher's pocket.

Photographic Bureau of The New York Edison Company

Hundreds of Specially Designed Motor Driven Machines are Operated at "Old Glory Corner"

Besides "Old Glory," the flags of practically every nation, sect, creed or organization are made in the Annin factory. The felt pennants that are conspicuous at all collegiate football games are very good examples of this special work. Thousands of these are made every year. So, too, are lodge flags and society banners and a host of other forms of decoration.

Flags of historic distinction in foreign lands are numbered among the Annin honors. The banners of Garibaldi's triumphant "Thousand" who marched through Italy in 1860 were made by Annin, so was the famous flag of the First Cuban Cavalry, ordered by Ned Buntling and used by General José Marti, as well as the first flags of the Republic of Brazil. The flags and streamers of the *Henrietta*, *Magic*, *Sappho*, *Mischief*, *Puritan*, *Mayflower* and practically every other cup defender were products of the Annin machines, as well as the colors that decorated the Brooklyn Bridge at its opening, and the bunting and streamers which festooned the Chicago Convention Hall when Lincoln and Johnson were nominated.

For these special flags the company maintains an art and designing department. Nearly one hundred thousand patterns have been made here and filed away. Artists make drawings of the flag, emblem or coat-of-arms desired and these are made into stencils by mean of perforating machines. By applying a black powder to these stencils the design is marked on the flag and artists bring them into relief by means of oil paint.

Through seventy years of flag making the Annin firm has supplied flags to the Nation and the individual under any and all conditions, but probably the most stirring time that "Old Glory Corner" has seen in many a decade occurred during the several weeks preceding the recent declaration of war against Germany. For days at a time crowds stormed the doors of the famous old red brick building trying to buy the national colors in single flags or in quantities.

The usually large stock carried in the Annin store-rooms melted away quickly and soon there was not a single flag to be had from stock. Meanwhile the machines in the lofts overhead and on down the block were whirring away ceaselessly trying to supply the great demand. Millions of flags were disposed of and still the machines were three and four weeks behind the orders that came flooding into the firm. Such was the wave of patriotism that swept the country and flung American banners to the breeze.

It is interesting to note in conclusion that electricity entered the industry of flag making at an early date, the Annin Company having been supplied by the Central Station since 1897.

Vacuum Cleaner Development

A PORTABLE vacuum cleaner for cleaning shelves, sidewalls, draperies, picture frames, and similar out-of-the-way places in the home or the store is among the recent electrical appliances to be developed. This cleaner weighs seven and one half pounds and is designed to be carried on the belt.

Photographic Bureau of The New York Edison Company

How Annin and Company Demonstrated Flag Making at the Electrical Show

Thus equipped, a maid can climb stepladders, stand on chairs or travel from place to place carrying the cleaner with her, and the scope of her activities is only limited by the length of the attachment cord.

When in operation the cleaner remains at the belt with dust bag inflated. A short flexible hose is provided to which can be attached a variety of tools, and these can be used at any point within reach of the operator. These appliances are proving popular in stores for cleaning display shelves.

A New Silk District

LOWER Madison avenue has changed its character—slipped out of the old and into the new as easily as a woman changes her gown. In the days of from ten to twenty years ago the blocks from Madison Square north to Thirty-fourth street constituted one of New York's fashionable residential sections. Substantial brownstone houses stretched in almost unbroken lines on each side of the avenue. Business far away downtown was out of sight and was a matter of little concern.

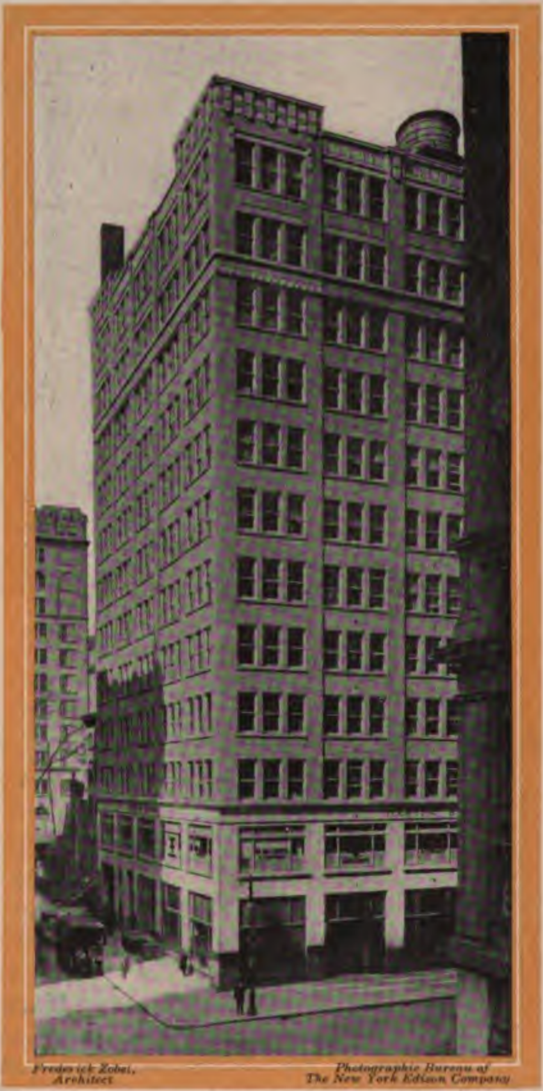
But business was coming nearer all the time—closing in from two sides. Only one street away—on Fourth avenue—the silk houses began an invasion from their old downtown quarters while on Fifth avenue the cloak and suit makers had begun their encroachments. Five years ago the two trades expanded simultaneously and absorbed the once exclusive Madison avenue which lay between them. New buildings of sky-scraper proportions began to overshadow private residences, and the inhabitants quietly packed up their belongings and moved on. As the new center proved its many advantages for both manufacturing and office purposes, still more buildings were contracted for and erected with the greatest possible speed. The year 1916 especially has seen some notable additions, and already plans are under way for enlarging present buildings and hastening the construction of others.

The silk industry of the country may be said to have its headquarters in the buildings along the avenue. Actual manufacturing is, of course, done largely in New York State outside of this city, New Jersey and Pennsylvania, these three monopolizing the industry in the United States. New York City, however, is the administrative center for a majority of firms, the offices centering about lower Madison avenue and the adjacent streets. A silk buyer can reach the big firms without travelling more than five or six blocks in all. This grouping of trades is a tremendous convenience both to buyer and manufacturer, and therefore mutually beneficial. From Madison Square north on Madison avenue to Thirty-fourth street there is hardly a large building whose ground floor is not occupied by the office and showroom of a well-known silk concern. For instance there are A. S. Rosenthal; L & E Stern; Perret, Gros & Million and the Susquehanna Company.

Silk Industry in New York

The entire block from Thirty-first to Thirty-second street on the west side is now occupied by the Remsen and the Backer buildings—the former devoted to office and showrooms and the latter to manufacturing. Erected during the past year, these buildings represent the finest and most modern type of structure.

In the Remsen building, 148 Madison avenue, sixteen stories are taken up entirely by offices and showrooms. Here on the ground floor are the new quarters of the Pyramid Silk Corporation. The lighting system is particularly interesting. It is of a new type, especially designed for the display and judging of delicate shades of color, and the effect produced is as near daylight as has yet been devised. Set in the rather high ceiling of the showroom the glass bulbs are of a peculiar shade of blue which in turn is shaded by white glass. The light, thrown against the ceiling, is reflected back from a cream-colored, curved plaster disc, producing to an unusually realistic degree an imitation of daylight.



Frederick Zobel, Architect

Photographic Bureau of The New York Edison Company

The Martin Building Erected in 1916 Numbers Among its Tenants Several Silk Companies

Scarcely one of the new silk showrooms or workrooms, for that matter, uses the old drop-light type of illumination. To simulate daylight is now the ideal of lighting and that is found to be best done by overhead indirect illumination. To get this effect the Pyramid corporation, for example, has a varied installation, the strength of the lamps being from fifty to six hundred watts.

Among the dealers in silk which have their offices in the Remsen building are the Lincoln Silk Company, Egypt Silk Mills Corporation, and the Central Textile Company.

The twelve story building just erected by the Susquehanna Silk Mills Corporation at 149 Madison avenue, and occupied solely by that company, is a model of its kind. Built to accommodate the special needs of this business its equipment is the last word in efficiency. From the automatic telephone system which connects every floor, to the electric tabulating machines which reduce to a minimum the amount of clerical work, electricity has been largely employed. In the main show room on the ground floor, a splendid high ceilinged space, twenty-six 400-watt indirect lights give the desired daylight effect.

From this floor to the top four electric dumbwaiters and an electric freight elevator, automatically operated, save constant tramping up and down on the part of employes. Another great saving in labor is effected by the automatic telephones, while the pneumatic tube system is another valuable time and labor saver.

On the upper floors of the building are the stock rooms, shipping department, offices, clerical department and the quarters of the staff artists who originate designs for silks. Here is a winding machine run by a one horsepower motor, and also a five horsepower cutting machine. Silk comes from the mills to the stock rooms in flat bolts, and in this shape it is usually sold to the dealers, but occasionally the retailer wants his goods wound in a roll. Then the silk is fed to the winding machine which in a few minutes turns it out again in the desired shape. The cutting machine likewise saves an untold amount of hand labor by cutting a quantity of silk to any required width and length.

Down the Avenue a short ways is the Martin building, another production of 1916. This twelve story structure is devoted to both manufacturing and offices. The Martin Company oc-

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Towering Loft Buildings on Lower Madison Avenue have taken the Place of Residences of a Decade Ago operating electric cab services, the largest being the Hertford Street Motor Company Ltd, with a fleet of one hundred and twenty cabs. The other three companies average twenty-two cabs each. A department store, Harrod's, has the next largest fleet of electrics, about seventy in all. Eight London dairies operate among them more than twenty-one electrics, while munition factories in and around the city are also large users of these cars for the local transportation of their product. These are the chief London "fleets," but there are many other manufacturers and business concerns which are gradually increasing their equipment of electric cars so that soon they too can be classed as big fleets. For instance Hay's Wharf Cartage Company Ltd., started with four electrics in connection with the meat-carrying branch of its business. The first cars proved so successful that the company soon added three more "G. V's" to the force. Lyons and Company, food manufacturers and contractors, went through a similar development of their delivery service and now boast a fleet of ten cars.

Wounded Soldiers Arriving in London Ride from Station to Hospital in Big Electric Lorries

Of the railroads which have realized the possiblities of the electric in freight handling the Midland is one of the best equipped. To date it has eighty-four vehicles, including seven baggage trucks and one battery locomotive. The Great Western Railroad has nineteen battery trucks, while twelve are operated by the London and North-Western Railway. These fleets are comparatively small now, but when a road takes the initial step

Troop Supplies and Other Baggage are Speeded Along on Motor Trucks

in buying trucks it never fails to go on adding to the number as fast as requirements demand so there is little question that the present equipment is only a beginning. Other roads which have taken this initial step are the Great Eastern and Great Central, which have baggage trucks, and the Lancashire and Yorkshire Railway which operates a five-ton lorry.

One of the surest signs that the electric has come to stay in England is that municipalities throughout the Kingdom are adopting these vehicles to perform such work as refuse collection and street cleaning, and to serve in their fire departments. Altogether there are about forty-three electrics doing these kinds of work distributed among the various cities. London has seven electric ambulances, the war office one general utility wagon, while Liverpool uses three electric fire engines.

Individual concerns with a few exceptions have not yet developed large fleets of electrics, but there is little doubt that the present equipment will serve as a basis for future growth as was the case with many of the big fleets in American cities. Already scattered concerns throughout England have small fleets. For instance, the Boots Pure Drug Company, Ltd., of Nottingham uses nine delivery wagons. The Daimler Ltd. Steel Works of Coventry use ten. Leeds Munition Factory has six.

As the total number of electrics in England today is approximately only a thousand it has been possible to keep track accurately of their distribution and accomplishment. These first cars are very much in the public eye—on trial as it were—and as they prove themselves efficient so will general confidence in the electric vehicle increase.

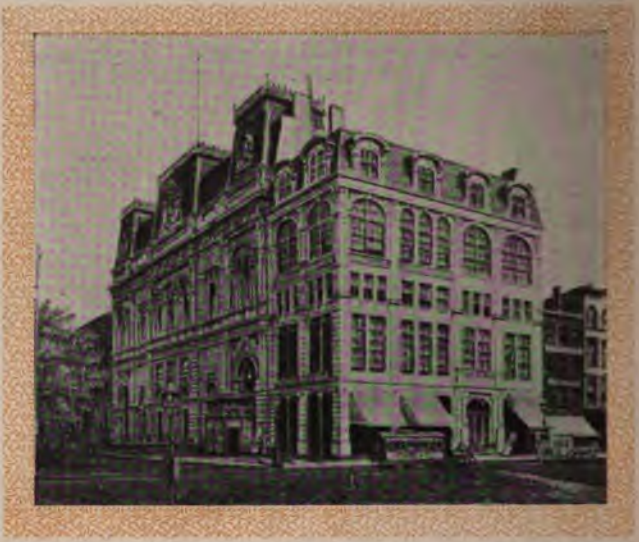
Already an Electric Vehicle Committee has been formed for the purpose of spreading information about the new cars, and encouraging their general use in England. Well-known engineers and government officials from cities throughout England are behind the movement, so that it promises to be of considerable influence. More than fifty central stations are also represented. The Committee is sending out circular letters frequently and publishes a quarterly journal known as *The Electric Vehicle.*

A Dumping Wagon Used at Ipswich to Replace Horse-Drawn Carts

Sixth Avenue Styles

EVEN streets get the habit. For something over a generation Sixth avenue has seen styles change with bewildering abruptness and now the thoroughfare itself has acquired a new aspect. Not that it has gone so far as to rebuild itself. Such extremes, though common enough in the world of fashion, have not seemed called for. It has nevertheless altered its cut and color and even its one-time deportment to conform with what it has judged an essential newness.

Nor is this the first time the old street has redressed itself. Indeed, until within a quarter century the presence here, along the blocks bordering on Chelsea, of great and all-inclusive department establishments was hardly dreamed of. Stores there were, but small affairs on the shop order where, if variety were lacking, a compensating quality was looked for and forthcoming. So prosperous grew certain of these stores that the variety began to enter in as well. Not one building but a second and then a third were pressed into service with the result that more than one great establishment of later times found itself here in the making.



The Famous Playhouse of Edwin Booth that Once Occupied the Site of the old McCreery Property at the corner of Twenty-third Street and Sixth Avenue

However, stores were not alone in evidence at this period. An occasional dwelling house and more than an occasional boarding house presented its brown stone frontage here for some years more. A church or two broke into the domain of bargains and fashions, and on the very corner where later on McCreery built his temple of commercial realism, no less a celebrity than Edwin Booth had erected a theatre the profits of which proved as visionary as the scenes depicted behind its footlights. The playhouse continued nevertheless for some time after Booth had retired from it ruined. A notice of the time of George Rignold announces a performance of Henry V at this theatre.

The fact that the Avenue even in

Photographic Bureau of The New York Edison Company

The Old McCreery Store Before It Assumed Its New Role of Loft and Small Store Building

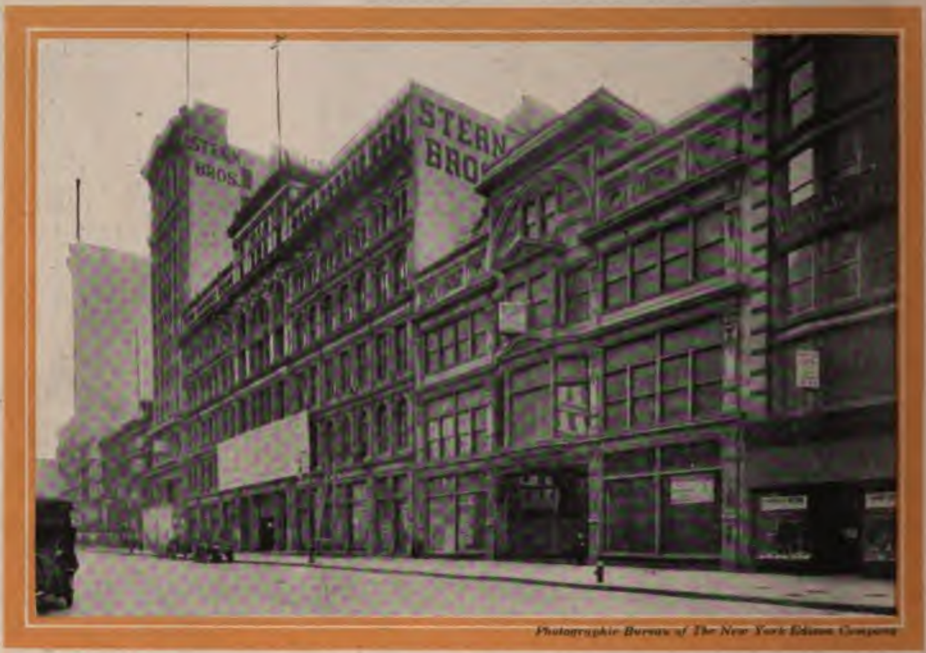
these times was a busy place is seen not only in the presence throughout the section of an industrious tram line but in comments on the same that have somehow managed to survive. One fortunate enough to come across some such reminiscence has no doubt read of the curious cars then in use. An iron ladder that gave access at the rear to the roof of these vehicles was a perpetual source of diversion for troublesome small boys. The driver, who was also perched on the roof, held a whip of amazing proportions. This was with an eye less to his horses than to the reckless youngsters who essayed the ladder behind him.

One is further taken by a sense of quaintness on reading that when a woman entered the car the conductor called to the men to give her a seat, and that if his eye chanced on a boy seated, said youth was yanked to his feet. The fare in those days is said to have been raised on one occasion to six cents. The public, however, was righteously indignant and insisted after giving the conductor his nickel on throwing the extra copper out the car window.

Quaintness is far from adequate with reference to an "Elevated" announcement of approximately this period. It would seem, in fact, to throw the days quoted considerably farther back than was actually the case.

"We run our four unique, elegantly finished and furnished cars, made expressly for our road, capable of seating 44 passengers each, and we take no more than can be seated. We are frequently compelled to refuse passengers after our cars are full. We carry," the brief paragraph goes on conclusively "about 1,300 daily."

Thus assured, little wonder the public traveled thither to shop in increasing numbers and that the stores themselves started sprouting and expanding to an extent quite unanticipated. In no time, apparently, the Adams, the Simpson Crawfords, the Sterns, the McCreerys with their neighbors of more or less renown had lined the thoroughfare and the Twenty-third street corner near at hand with retail edifices the like of which the town had never imagined. One and all of these structures were equipped with electricity along with other modern conveniences. The fact that they undertook to make their current themselves is no reflection on the Central Station industry at that time, as that very industry engineered the installation of private equipments in territories which in those days it had not attempted to reach. Later on, and in fact very soon after, these big stores in several instances were glad to avail themselves of Central Station supply, on the ground not only of economy but of evenness and dependability. McCreery adopted this service as early as 1895 and continued with it until the abandonment of the site. Four years after this, Simpson Crawford procured the same service as a permanent arrangement. The Stern management persisted longer on the old basis, but did make use of Edison Service sometime before the business moved to Forty-second street. The continuance of that service in the new building proves the value put upon it in the old surroundings.



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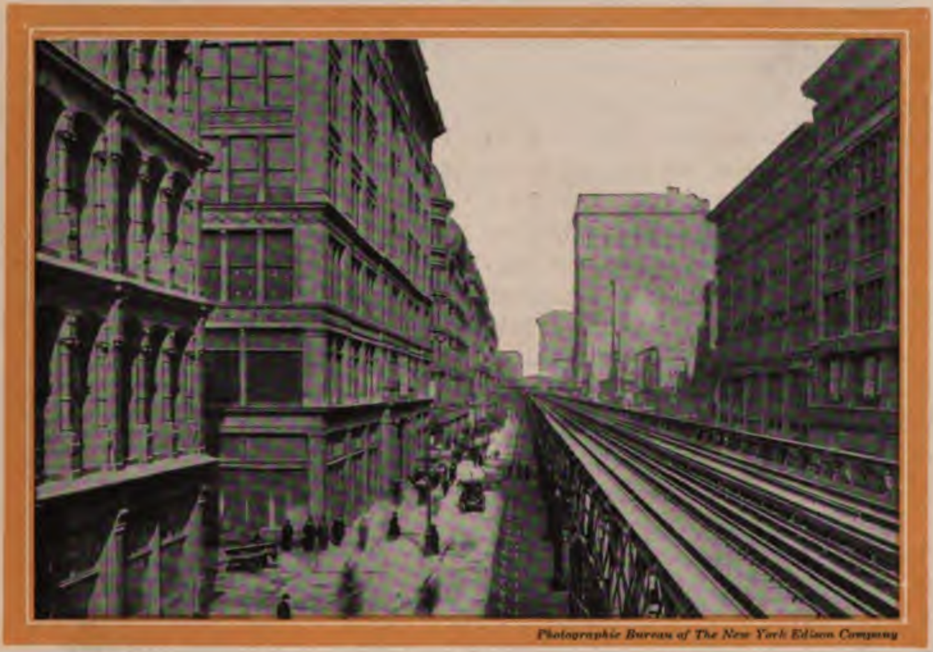
The Twenty-third street Stern Buildings are Found Today to be Well Taken Up by Loft Tenants of the Better Class

The district at present looks as though some one had resorted to Mr Gumberger's device of spreading a smallpox scare among the party. Blank and dusty windows stare out on the avenue where colorful shows of dress goods once drew the crowds, while the facades above peer across at each other through vacant and grimy spectacles. But this of course is merely transition, a really unfair advantage to take of any one, much less a skittish old avenue devoted to styles and their changings. Already about the Twenty-third street corner many a loft has cleaned and furbished itself and blossomed out anew in the form of a live manufacturing establishment. Along Twenty-third street itself the once thriving store floors are at present thriving, if less pretentiously, in the interest of large importers and wholesalers. Even the numerous lofts hereabouts have all been taken, and eagerly, by hat and accessory makers known the country over.



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Looking Up the Avenue Along the Fronts of the Now Transformed Greenhut, Simpson Crawford, O'Neil, Altman, and Adams Stores

There are those who wonder at the persistence of properties under circumstances as unpromising as they imagine these to have become. The district is not as frequented as formerly, true enough, but that fact in itself is of little consequence to the wholesale interests that have moved there. The buildings themselves are as roomy and substantial as ever they were. Better still, because supporting the convenience and availability of the section, is the continued presence in these properties of an electrical supply providing light and motor power at all times dependable and at hand. The fickle old avenue has changed its outward appearance and to an astonishing degree. But like many another fickle old body it sticks to the diet of energy and resource that has all along made its changing habits possible.

A Motor Service Station

THE Westinghouse Electric and Manufacturing Company has recently taken possession of the four-story brick building at Thirty-sixth street and Tenth avenue, to serve as a headquarters for the Metropolitan service departments. This includes also what was formerly known as the Construction department, and the primary function of that department—the erection of machinery—is, of course, still the first important service to customers.

On the first floor of the building are located the executive offices, the engineering force and a receiving room. Part of a large space where trucks unload is devoted also to the repair of heavy machinery for the handling of which an electric crane has been installed.

Machinery up to 6,000 pounds in weight is repaired in a large shop comprising all the third floor area. The rewinding of armature coils is an important feature of this repair work, and the equipment in the shop includes a ten-ton electric press for forcing out the armature shafts. Nitrogen lamps give an intense and satisfactory illumination, and drop lights have been eliminated save where they are necessary for special work. Current for the operation of all electric machinery and for lighting equipment is supplied from the mains of The New York Edison Company.

Motors of obsolete type are frequently sent to the station for the rewinding of armatures, and the armature coils for such motors are manufactured in the building, as well as coils of the same kind which are sold to customers. The fourth floor, an airy and well lighted space where more than forty electrically driven winding machines are installed, is given over to this work. Thirty-four of these machines are in charge of girl operatives. Over the wooden mould of

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At the Corner of Thirty-sixth Street and Tenth Avenue is the Large Building which the Westinghouse Company has taken over as a Service Station

Photographic Bureau of The New York Edison Company

The Big Repair Shop is on the Third Floor of the Station

each machine is wound the copper wire which forms the coils, glue from electric glue-pots being applied to hold the insulated wires together. In a separate room the finished coils are dipped in vats of black or sterling varnish and baked in ovens at a temperature of 230 degrees Fahrenheit.

On the second floor, where a large stockroom is also located, one other branch of manufacture is carried on—namely, the making of switchboards. Paper patterns of actual size and bearing the necessary markings are laid directly over the previously prepared panel for an electric drill to do the work of cutting. A spraying of black lacquer gives the panels the proper finish. The switchboard is assembled on a frame where the necessary circuit breakers and switches are mounted and the wiring is completed.

Manufacturing, however, holds a secondary place in the purpose for which the building was erected. As a headquarters for construction work and the erection of machinery, and as a service center for emergency repairing, the new station has its greatest importance to the new company and to the city. The availability of day and night repair service often prevents serious interruption in the conduct of business; and tasks of this kind, as well as new installations, the shop and its force are fully equipped to handle with all possible speed.

Photographic Bureau of The New York Edison Company

Armature Winding Machines, Electrically Driven, are in Charge of Girl Operatives

Pay Dirt

WHEN you think of it, there is little difference between man as he is and man as he was when first he began to explore the earth's contents. In essentials the two are as alike as two peas. They have wanted the same things and have achieved the same results, the one in imagination, the other in hard, unyielding matter—which is, to be sure, a detail worth noting. They have differed chiefly in regard to the process.

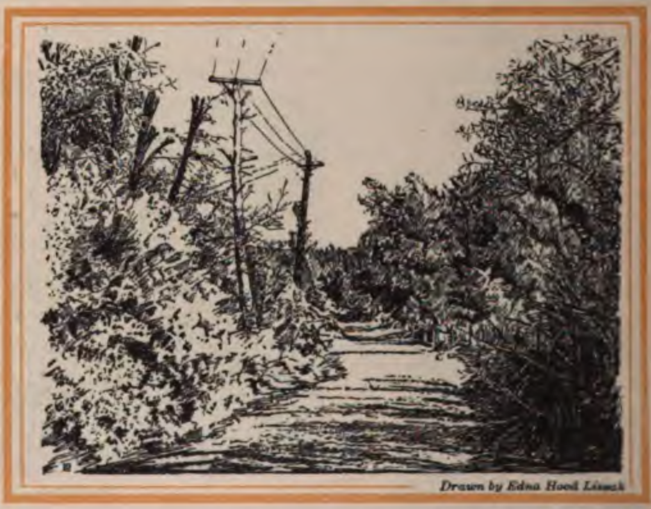
Anciently any process was simple; a god was the process. Take Midas, for instance. He was a great king who wanted gold so badly that at last the accommodating god Mercury granted his wish that everything which he touched might be transmuted into gold. The results, every reader will remember, proved to be inconvenient, as might have been expected.

In modern times the process is exceedingly complex, frequently consisting of two elements: a machine—electrically operated, if it is adequate to its responsibilities—and a situation with which it is confronted.

In the present case the scene is laid somewhere in California; the situation is the bar of a river, or perhaps a river bank, each cubic yard of which may contain from ten to fifty or sixty cents' worth of the yellow particles that men have from remote times given their lives to possess.

The machine is an electrically operated dredge, and in one portion of its cavernous interior there is a switchboard. Here, at a touch, is controlled the ponderous machinery by means of which tons of gold-bearing earth are daily cut from the bank, deposited within the dredge, and their precious contents extracted. There is no magic in this process, for each cubic yard of the soil cut from the bank by the steel "lips" of the massive manganese buckets may yield but ten or twenty cents worth of gold.

Ages ago, before the giant Sierras had reared their heights, there was de-



Drawn by Edna Hood Lissak

The Transmission Line which Carries Central Station Energy to the Gold Ships of California

Boulders Weighing Half a Ton are Dug Up by the Gold Dredges

posited by the action of unknown rivers gold-bearing sediment in the basin of what is now the Sacramento, and then through volcanic action these gravel beds were covered with mud. Through fresh cataclysms of nature the Sierras were lifted; new gravel deposits, mixed with gold, were formed, and new rivers flowed through the valley cutting across the ancient gravel beds and exposing the gold-laden soil. It was this soil, exposed by the gulches and streams of the Sierras which enriched beyond his dreams of avarice many a hardy pioneer in the early days of placer mining in California, when (during the first ten years after the discovery of gold) the State was yielding an average production of fifty-five million dollars from this industry, though the operations were for the most part performed by hand. Then came hydraulic mining by which the gravel was sluiced down from the river banks leaving its deposit of gold in the sluice boxes of the miners, but in time the rivers became choked with "tailings" and the hydraulic process was interdicted by law. Then the dredge, which performs the triple feat of clearing away the useless gravel, providing rock of practically uniform size for industrial purposes and fallow soil for agricultural uses, was called into existence.

Until the year 1898 dredging was performed by the aid of crude one-bucket affairs, but in 1897 the Redson Iron Works of San Francisco built a multiple bucket dredge for operation on the Feather River, six miles below Oroville, Butte County, a town which was destined to be for some years the center of the gold mining industry. The machinery for this pioneer dredge was operated by steam, and its thirty-

Drawn by Edna Hood Lissak

Steel lipped Buckets Each Weighing 4,600 Pounds Eat their Way through the Gold Bearing Sandbars two buckets were of only three and one-half cubic feet capacity, while the annual cost of operating it nearly equalled the initial cost of construction, $40,000. A few years later came the electric dredge, the only "Gold Ship" now working in California, with the result that gold dredging now represents thirty-eight per cent of the total production of the State.

On page 461 is shown a monster dredge which is in use upon the Yuba River and similar, except for its great size, to others which are in operation throughout the State. It is a scow one hundred and fifty feet in length, with hull and deck of steel and superstructure of wood, carrying in the fore part a digging ladder upon which revolves an endless chain of buckets, driven by a huge sprocket. In the stern is a stacker by means of which the tailings are carried and piled in mounds far to the rear. The dredge, as it advances, eating its way into the land with its steel-lipped buckets, each weighing 4600, pounds, widens the circle of water about it, carrying with it the pond in which it floats and creating new land behind it.

By means of this dredge, built by the Yuba Construction Company of Marysville, California, partially or even wholly submerged gravel deposits can be excavated to a depth of seventy feet, 15,000 tons of earth removed daily, and every ounce of gold extracted. As the buckets with their loads of sand, rock and gravel pass over the upper tumbler, they drop their contents into a hopper. Thence the material passes into a hollow revolving screen of steel, which in the largest gold dredges measures about sixty feet in length.

Drawn by Edna Hood Lissak

Through the Half-Inch Perforations of this Screen the Fine Gold Bearing Earth Falls to the Tables Beneath

The cylinder of the screen, which is slightly elevated at one end, is perforated by half-inch holes, and through these holes the finer and heavier gold-bearing earth, now washed and disintegrated within the screen by means of water, passes to the gold-saving tables. These are of steel also, constructed in a series of riffles which offer obstruction to the material as by the action of water and gravity it moves over the table. By these riffles the speed of the water is gradually reduced and the mercury with which the tables are overlaid, having an affinity for the gold, catches the particles, allowing the finer tailings to be carried away by the water and deposited at the stern of the dredge. All that now remains is to clean the plates of amalgam, an operation which is performed every week or so, and evaporate the mercury by heating, thus leaving the free gold for shipment.

Meanwhile, the coarse material has been dumped from the revolving screen upon a rubber belt which moves continuously upon the long stacker in the stern of the dredge, and passing upward upon this belt is deposited so far in the rear of the dredge that the operations of the latter are not hampered by the waste. In the stern of the dredge also are massive seventy-foot steel shafts or "spuds" whose pointed ends pin it securely in position. As the dredge eats its way into the land, one of the spuds is raised; the dredge is moved, and again anchored. All the machinery for the operation of these dredges, including the large and small centrifugal pumps, is driven by electricity, the principal digging motor being of 400 horsepower and the total installation 957 horsepower. One man at the switchboard controls all this power, and but three are required for all the process of dredging.

There are some fifty gold dredges in California engaged in lifting and handling 78,000,000 cubic yards of earth a year and from this recovering annually $8,000,000, most of which would have been lost to the world but for the electric motor. There are now more than sixty dredges at their work, literally crawling through the land, devouring earth, assimilating gold, and providing for the Californian, materials which he is using in the construction of his famous roads. In some instances they form levees "to confine the rivers glutted with sand by the hydraulic processes of a generation ago, thus protecting farming lands in times of flood."

Surely the touch upon the switchboard which keeps in motion this industry is golden, for it is followed by results which benefit, not only the possessor of the "Gold Ship" but likewise the community and the State.

Drawn by Edna Hood Lissak

Eating into the Land Before it, and Depositing the Gravel Far to the Rear, the Dredge Creates Its Own Pond as it Progresses

Manufacturers and Agents (Continued)

Motors

General Uses

Allis-Chalmers Co—50 Church St
Bell Electric Motor Co—30 Church St
Burke Elec Co—30 Church St
C & C Electric & Mfg Co—90 West St
Century Electric Co—30 Church St
Colonial Fan & Motor Co—150 Chambers St
Crocker-Wheeler Co—30 Church St
Diehl Mfg Co—149 Broadway
Dudley-Curry Elec Co—154 Nassau St
Eck Dynamo & Motor Co—46 W Broadway
Electro-Dynamic Co The—Ave A Bayonne N J
Emerson Elec Mfg Co The—50 Church St
General Electric Co—30 Church St
Holtzer-Cabot Electric Co—83 Warren St
Imperial Elec Co (Watson)—253 Broadway
Lincoln Electric Co—149 Broadway
Marelli & Ercole Co—309 Broadway
Northwestern Mfg Co—243 Canal St
Peerless Elec Co—147-9 W 35th St
Reliance Electric & Engineering Co—90 West St
Robbins & Myers Co The—30 Church St
Sprague Electric Works—527 West 34th St
Triumph Electric Co—114 Liberty St
Wagner Electric Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Inspection—Maintenance—Repairs

Blackall & Baldwin Co—39 Cortlandt St
Bogart Co A L—55 Barclay St
Borne Chas A Co Inc—35-37 Wooster St
Comstock Associate Co—101 Park Ave
Conlan Electric Co—43 Murray St
Elec Machine Tool Co—50 Church St
Elec Motor Insp & Rep Co—1 Beekman St
Elec Repair Co—548-550 W 23d St
General Electric Inspection Co—237 Fulton St
Globe Elec Cont & Rep Co The—434 Broome St
Graham Bros Co—585 Hudson St
Hammill John—55 Ann St
Harlem Electric Co—6 E 116th St
Jordon Bros Inc—74 Beekman St
Kelting Electric Co—119 Pearl St
Leve Robert E—19 E 32d St
Maintenance Co The—417 Canal St
National Electric Co—89 Centre St
Naumer Elec Co—96 Beekman St
Naylor & Newton—243 Canal St
Reilly Maintenance Corporation—122 Centre St
Russell & Co—56 W 45th St
See Van Dyck C—39 Cortlandt St
Weiderman Geo Elec Co—35-37 Rose St
Westinghouse Elec & Mfg Co (Repair Shop)—528 W 25th St

Starters and Controllers

Allen-Bradley Co—50 Church St
Automatic Switch Co—4 White St
Curtis-Carhart Co Inc—150 Chambers St
Cutler-Hammer Mfg Co The—50 Church St
Electric Controller & Mfg Co The—50 Church St
General Electric Co—30 Church St
Industrial Controller Co—50 Church St
Rowan Electric Mfg Co—39 Cortlandt St
Ward Leonard Electric Co—Mount Vernon N Y
Westinghouse Elec & Mfg Co—165 Broadway

Used Motors

Archer & Baldwin—114-118 Liberty St
Cutter Co F B—50 Church St
Duzets & Son—546 W 45th St
Graham Jas A—30 Church St
Holcomb & Co D S Inc—241-3 Canal St
Klein & Co—208 Centre St
Oneida Elect Co—313 Canal St

Office Accessories

Edison Dictating Machine—Orange N J 114 Liberty St N Y C
Ensign Elec Calculating Machine—280 B'way
"The Dictaphone"—83 Chambers St
The Hooven, Owens, Rentschler Co—Woolworth Building
"The Millionaire" Elec Cal Mach—1 Madison Ave

Pumps

Beach-Russ Co—220 Broadway
Blackall & Baldwin Co—39 Cortlandt St
D'Olier Centrifugal Pump & Machine Co—503 Morris Building Philadelphia Pa
Goulds Mfg Co—16 Murray St
Holland Machine Co—90 West Broadway
International Steam Pump Co—115 Broadway
Lea-Courtenay Co—90 West St
Marelli & Ercole Co—309 Broadway
Platt Iron Works The—50 Church St
Quimby William E Inc—548 West 23d St
Rider Ericsson Engine Co—20 Murray St
Rumsey Pump & Mach Co—75 Warren St
Twinvolute Pump and Mfg Co—30 Church St
Western Elec Co—463 West St and 105 W 40th St

Refrigeration

Automatic Refrigerating Co—50 East 42d St
Brunswick Refrigerating Co—30 Church St
Electrical Refrigerating Co Inc The—Woolworth Building
Johns-Manville Co H W—41st St & Madison Ave
Montclair Refrigerating Corp—Woolworth Bldg
Shipley Const & Sup Co—Columbia St Bklyn N Y
Triumph Ice Machine Co—30 Church St
Voss Ice Mach Works—242-252 East 122d St

Signs

B & B Sign Company—347 Fifth Ave
Bilt-Well Sign System (Elec) 113-115 E 15th St
Bofinger Bros—146 East 42d St
Commercial Sign Co Inc—440 W 46th St
Empire Elec Sign Co—162 East 118th St
Federal Sign System (Electric)—649 W 43d St
Fricker Frederick—430 11th Ave
Frink I P—24th St and 10th Ave
Gude Co O J—220 W 42d St
Halpern Bros—210 West 26th St
Manheimer Co The—162 W 34th St
Martin P J—306 W 53d St
Mechling Charles J—477 Willis Ave
Mercantile Adv Co—17 Battery Pl
Norden Electric Sign Co Inc—311 W 40th St
Opal Sign Co—254 Tenth Ave
Pisch Electric Sign Co Inc The—415 W 48th St
Prismlyte Co The—8 St Felix St Brooklyn
Snow & Co—531 W 46th St
Rice Geo H Co Inc—481-87 Sterling Pl Bklyn
Strauss & Co—209 W 48th St
Strauss L L—74 W 125th St
Universal Elec Stage Ltg Co—240 W 50th St
Wertheimer Sign Co—558 W 36th St

Manufacturers and Agents (Concluded)

Sign Flashers

Betts & Betts—511 W 42d St
Phelps Mfg Co—624 Broadway
Reynolds Elec Co—1123 Broadway

Supply Dealers

Manhattan

Alpha Elec Co Inc—116-118 W 29th St
Baily Elec Supply Co—62 Vesey St
Bohn Elec Co C C—820 6th Ave
Bunnell & Co J H—32 Park Pl
Burnet Co The—69 South St & 1800 Park Ave
Central Electrical Supply Co—4 West 16th St
Crannell, Nugent & Kranzer Inc—110 W 30th St
Fullerton Electric Co—109-115 W 26th St
Goetz A E—55 Barclay St
Hartt & Morison—780 Sixth Ave
Killoch Co David—57 Murray St
Latham & Co E B—4 Murray St
Leahy John J—48 Dey St
Leveridge Chas W Inc—133 Liberty St
Manhattan Electrical Supply Co—17 Park Pl 110 West 42d St, 127 West 125th St
Metropolitan Elec Products Co—101 W 42d St
Metropolitan Elec Supply Co—126 W 36th St
N W Elec Equip Co—35 Vestry St
Ostrander & Co W R—371 Broadway
Public Electrical Supply House—62 Essex St
Royal-Eastern Elec Sup Co—114 W 27th St
Sibley-Pitman—19-21 West 36th St
Smith J M & Son—4 E 8th St
Thomas & Betts Co—105 Hudson St
Western Elec Co—463 West St and 105 W 40th St

Bronx

Bronx Elec Supply Co The—612 Melrose Ave
Royal Eastern Supply Co The—506 Willis Ave
Webber Supply Co The—558 Melrose Ave

Electro-Plating Apparatus and Supplies

Green Electric Co W—81 Nassau St
Munning-Loeb Co—50 Church St

Specialties

Aladdin Lamp Corporation—52 Vanderbilt Ave
Bonnell & Co W A—132 Church St
Bromley-Merseles Mfg Co Dishwashing Machines—1328 Broadway
Brown Elec Co Wm S—3 W 29th St
Chapin Co Chas E—201 Fulton St
Corliss Carbon Co—114 Liberty St
Cutler-Hammer Mfg Co The—50 Church St
DeVeau Tele Mfg Co—472 18th St Bklyn N Y
Electric Fountain Co The—348 W 42nd St
Frantz Premier Distrib Co Inc—119 W 42d St
Fulton-Bell Co—105 W 40th St
Howe Scale Co of N Y The—341 Broadway
Kirkman Eng Corporation—237 Lafayette St
Mercantile Adv Co—17 Battery Place
Organ Arthur—114 Liberty St
Pittsburgh Electric Spec Co—412 8th Ave
Shelton Electric Co—30 E 42d St
Universal Elec Stage Light'g Co—240 W 50th St
Wallace Novelty Co Inc The—25 E 24th St
Ward Leonard Electric Co—Mount Vernon N Y
White J H Mfg Co—111 No 3rd St Brooklyn
Wicks Electric Co—Cleveland Ohio

Switch and Distributing Boards

Anderson Mfg Co A & J M—135 Broadway
Automatic Switch Co—4-6 White St
Crouse Hinds Co—30 Church St
Empire Eng'g & Supply Co—1 Dominick St
General Electric Co—30 Church St
Johns-Manville Co H W—Mad Ave & 41st St
Krantz Mfg Co—160 Seventh St Bklyn
Le Baron B Johnson—Madison Ave & 41st St
Metropolitan Elec Mfg Co—Long Island City
Metropolitan Engineering Co—35 Vestry St
Pringle Elec Mfg Co—39 Cortlandt St
Rall Frederick—19 Park Pl
Sprague Electric Works—527 W 34th St
Trumbull Electric Mfg Co—114 Liberty St
Walker Electric Co—50 Church St
Western Elec Co—463 West St and 105 W 40th St
Westinghouse Elec & Mfg Co—165 Broadway

Vacuum Cleaners

Bohn Electric Co C C (Santo)—820 Sixth Ave
Comstock Associate Co (Sturtevant)—101 Park Avenue
Duntley Products Sales Co—295 Fifth Ave
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Frantz Premier Distrib Co Inc—119 W 42d St
Hartt & Morison—780 Sixth Ave
Hurley Machine Co (Thor)—147 W 42nd St
Innovation Electric Co—585 Hudson St
Metropolitan Elec Products Co—101 W 42d St
Muenzen Specialty Co—131 W 42d St
Ohio Co The—1463 Broadway
Regina Co—47 West 34th St
Richmond Radiator Co—1480 Broadway
Sloane W & J (Invincible) Fifth Ave and 47th St
Spencer Turbine Cleaner Co—101 Park Ave
Tuec Company The—1457 Broadway
Univ Vacuum Cleaner Maint Co—47 W 38th St
Western Elec Co—463 West St and 105 W 40th St

Vibrators and Hair Dryers

Barker Metal Furniture Co—255 Canal St
Hartt & Morison—780 Sixth Ave
Jorgensen John—114 Liberty St
Kandem Electric Co Inc—49 E 21st St
Manhattan Electrical Supply Co—17 Park Place, 110 West 42d St. 127 West 125th St
Sanax Co In—1c The25 E 23d St
Shelton Elec Co—30 E 42d St
Sibley-Pitman—19-21 W 36th St
Western Elec Co—463 West St and 105 W 40th St

Washing Machines

Brokaw-Eden Mfg Co (The Eden)—39 E 42d St
Federal Sign System (Electric)—649 W 43d St
Fox Electric Corp (Eden)—119 W 42d St
Hart Wallace B—(Arora) (Judd) (1900) Cataract —46 E 41st St
Home Devices Corp (Modern)—Bush Terminal Brooklyn
Hurley Machine Co—147-157 W 42d St
National Sewing Machine Co—290 Broadway
Northwestern Electric Equipment Co (Geyser)—35 Vestry St
Sibley-Pitman—19-21 W 36th St
Wemlinger Co Inc The—40 Whitehall St
Western Elec Co—105 W 40th St and 463 West St

Welders

Lincoln Electric Co—149 Broadway
Welding Materials Co—114 Liberty St
Westinghouse Electric & Mfg Co—165 Broadway
Winfield Elec Welding Machine Co—50 Church St

Wiring and Installation Contractors

West of Broadway and Fifth Avenue

Amsterdam Ave 868—Joseph Rice
Amsterdam Ave 943—P D Dunn
Amsterdam Ave 984—Sam A Grice & Co
Amsterdam Ave 1768—The Lincoln Electric & Repair Shop
Amsterdam Ave 1989—Manhattan Electrical Maintenance Company
Broadway 212—Charles S Borger
Broadway 335—Park Sullinger
Broadway 853—J Menkes
Broadway 1123—William J Shore
Broadway 1133—Van Wagoner-Linn Cons Co
Broadway 1170—Alliance Electric Co Inc
Broadway 1270—Croker National Fire Prevention Engineering Company
Broadway 1402—Gagen & Butler
Broadway 1929—F W Astarita
Broadway 1931—Bull-Duroy Electric Co
Broadway 1960—E May Inc
Broadway 2304—C E MacCabe
Broadway 2304—Frank B Widmayer Co
Broadway 2382—Howard S Beidleman
Canal St 313—Oneida Electric Co
Canal St 417—G E Engineering Co
Canal St 417—The Maintenance Co
Christopher St 41—W Buch
Church St 30—L K Comstock & Co
Church St 50—William Braun
Columbus Ave 220—Thomas F Carr
Columbus Ave 348—H Blumenstetter
Columbus Ave 517—Samuel Millinger
Columbus Ave 549—Hoffman & Elias
Columbus Ave 847—Mariposa Electric Co
Cortlandt St 26—Cleveland & Ryan
Cortlandt St 39—Blackall & Baldwin Co
Cortlandt St 84—Bleyle Elec Co
Duane St 172—Jas F Hughes Co
Eight Ave 461—A J Buschmann Co
Eighth Ave 461—Edward B Stott & Co
Eighth Ave 766—H Lauer & Co
Fifth Ave 75—H M Walter
Fifth Ave 320—J P Hall-Smith Co
Fifth Ave 503—Alfred U Keedwell & Co
Fulton St 237—General Electric Inspection Co
Greenwich St 183—Thomas & Johnson
Greenwich St 255—Garret M Ross
Hudson St 585—S Edw Eaton & Co
Liberty St 120—S Arthur Brown & Co
Liberty St 120—Watson-Flagg Engineering Co
St Nicholas Ave 1048—George E Ryan Co Inc
Sixth Ave 440—A Goldman & Co Inc
Sixth Ave 617—Zenker & Siems
Sixth Ave 632—John J Finn
Sixth Ave 819—Thomas Hindley & Son
Sixth Ave 820—C C Bohn Electric Co
Sixth Ave 882—P McGunnigle & Son
Sixth Ave 906—R A Schoenberg & Co
Sixth Ave 1009—John T Whitehead & Son
Seventh Ave 360—Louis Freund
Seventh Ave 422—Franklin Elec Co
Seventh Ave 2286—Nathan Zolinsky
Tenth Ave 466—George E Valley & Bros
Tenth Ave 578—Chas F Dunker
Thames St 27—McLeod Ward & Co
Varick St 143-145—H C Griffin & Co Inc
Vesey St 53—F A Frey
West Broadway 170—J S Bihin
West Broadway 490—X L Machine & Elec Co
West End Ave 165—F W Astarita
West St 116—Knickerbocker Electric Co
West 12th St 101—C S Harris
West 17th St 108—Manhattan Elec Cont Co
West 17th St 142—Harry A Hanft
West 26th St 101—Pruver Electric Co
West 30th St 114—Tucker Elec Construction Co
West 31st St 109—Jandous Elec Equip Co Inc
West 33d St 221—E-J Elec Installation Co
West 34th St 20—Harry Alexander Inc
West 34th St 110—Nimis & Nimis Inc
West 35th St 147-49—N Y Elec Installation Co
West 38th St 39-41—J Fischer Electric Co
West 40th St 105—Lord Electric Co
West 40th St 337—William W Ritchie
West 40th St 447—Manhattan Engineering Co
West 40th St 458—George L Ford
West 42d St 25—William D Munro
West 42d St 112—Oberg Blumberg & Bleyer
West 42d St 121—Conduit Wiring Co
West 42d St 229—M Schweiger & Co Inc
West 42d St 314—A & A Electric Co
West 45th St 56—Russell & Co
West 45th St 100—Robert Bernecker
West 48th St 209-13—Strauss & Company Inc
West 53d St 207—Wm A Brown
West 53d St 243—W E Nichols
West 59th St 401—John T Williams Co
West 72d St 176—Kaufman & Burkert
West 83d St 121—C A Christesen
West 99th St 146—John A Marcato Co
West 100th St 204—L Koehler
West 116th St 138—P Simpson
West 116th St 227—Lewis S Davis
West 125th St 71-75—H Kaufman
West 125th St 74—Lawrence L Strauss
West 125th St 215—M J Heller Elect Co
West 125th St 247—Planet Elec & Sup Co
Wooster St 12—Durbrow & Hearne Mfg Co

East of Broadway and Fifth Avenue

Beekman St 74—Jordan Bros Const Co
Bible House 78—Thos C Miller
Beaver St 42—Hanover Elect Co
Broome St 114—B H Weinberg
Broome St 434—The Globe Electric Contracting & Repairing Company
Cedar St 16—Wm Truswell & Son
Chrystie St 155—A Fox
Dover St 8—Hazazer Electric Co Inc
East Houston St 93—I Berkowitz
East 3d St 48—B Ackerman Co
East 3d St 136—H A Schreiber
East 5th St 416—Frank Bloom
East 8th St 4—J M Smith & Son
East 8th St 48—American Pressing Iron Co
East 13th St 2—B W Sandbach & Co
East 15th St 6—Geo D Beinert Inc

Wiring and Installation Contractors (Concluded)

East of Broadway and Fifth Avenue

Beekman St 74—Jordan Bros Inc
Bible House 78—Thos C Miller
Broome St 114—B H Weinberg
Broome St 434—The Globe Electric Contracting & Repairing Company
Canal St 313—Oneida Electric Co
Cedar St 16—Wm Truswell & Son
Dover St 8—Hazazer Electric Co Inc
East Houston St 93—I Berkowitz
East 3d St 136—H A Schreiber
East 8th St 4—J M Smith & Son
East 8th St 48—American Pressing Iron Co
East 9th St 55—B W Sandbach & Co
East 21st St 22—Shultz Electric Co The
East 22d St 27—Hunt & Morgan
East 23d St 42—Kimball Elec Construction Co
East 23rd St 131—G C Kastner
East 25th St 122—Isidor Fajans
East 28th St 114—Burkart Elec Co
East 28th St 34—S H Klein
East 28th St 118—John Jay Gallagher Co Inc
East 28th St 118—Covic Electric Co
East 28th St 132—Miller Electric Co
East 28th St 159—Behlert Elec Co
East 30th St 20—I Hoffman & Co
East 31st St 49—Mechanical Electric Co
East 32d St 100—J L Moriarty
East 34th St 144—S W Electric Co
East 35th St 217-19—Manhattan Engineering Company
East 37th St 207—Reis & O'Donovan Inc
East 45th St 70—Edwards Elec Contracting Co
East 45th St 70—J Livingston & Co Inc
East 45th St 70—Peets & Powers
East 57th St 227—Morris Levi & Co
East 59th St 57—Stanley Ruth & Co
East 72d St 167—Edward J Dustman
East 116th St 6—Harlem Electric Co
East 125th St 77—Peter Jansen
Essex St 62—Nathan J Feinberg
First Ave 220—S Newberger
First Ave 1509—Edward Zenker
Fourth Ave 373—Hatzel & Buehler
Frankfort St 26-30—J F Bidstrup & Co
Frankfort St 32-34—John Hammill
Front St 124—Charles Davidson
Fulton St 44—Ernest Klein & Bro
Fulton St 44—Muecke-Diegel Co
Fulton St 62—Fulton Electric Co
Great Jones St 38—August Weber
John St 84—Alfred Whiteley
Lexington Ave 186—Porsth Electric Co
Lexington Ave 368—E F Rusie
Lexington Ave 405—Nathan C Solomon
Lexington Ave 767—Frise & Jantzer
Lexington Ave 1026—Kendelhardt & Morris
Lexington Ave 1110—The M & C Electric Co
Lexington Ave 1245—Julius E Woelfe
Lexington Ave 1307—Kirschen Bros
Lexington Ave 1390—M Strompf
Madison Ave 1—Thomas L Dillon
Madison Ave 712—D M Rousseau
Madison Ave 826—N C Haynes
Maiden Lane 91—Weber & Jones
Mott St 83—Jos Addison
Nassau St 132—Adler Co I A
Park Ave 101—Comstock Associate Co
Park Ave 101—United Elect Construction Co
Park Ave 103—Stehlin-Miller-Henes Co
Park Ave 632—T J McGunnigle
Park Ave 1630—Wimpie Electric Co
Park Ave 1763—G V Gedroice & Co
Pearl St 119—Kelting Elec Co
Rose St 35-37—Geo Weiderman Elec Co
Third Ave 208 and 348—Irving Kenner Co
Third Ave 200—Maurice Young
Third Ave 1021—E Kalkan
Third Ave 1373—H Goldberg
Third Ave 1397—Chas J Eichman
Third Ave 1915—I Gabriel
Third Ave 2586—A F Eggers
Wall St 2—Edwin C Gee
Willett St 80—Schneider & Kandel

Bronx

Altmann Leopold—1226 Washington Ave
Leonard B Fox—313 E 141st St
Blackman & Guttman—226 East 144th St
Bogan, Irving A—4192 Park Ave
Dwyer M J—1831 Trafalgar Place
Edelmuth Jos—1046 Jackson Ave
Ellerbrock Herman H—379 East 138th St
Evans & Kaestner—939 Intervale Ave
Hegeler F H—305 E 180th St
Israel & Co—2559 Third Ave
Josephson Joseph B—785 Forest Ave
Landy Jacob—673 Elton Ave
Mathias J J—443 Willis Ave
Rosenfield & Harris—915 Whitlock Ave
Ross Edwin L—356 East 138th St
Sayles Electric Co—736 E 163d St
Schwarzler M & Son—460 E 167th St
Sladek Frank—3440 Third Ave
Starobin Jos—795 E 158th St
Strachan E A—435 E 155th St
Vielberth Joseph F—1243 Taylor Ave
Woods Lewis H—2355 Jerome Ave
Yale Electric Co—650 Melrose Ave

Yonkers

Excelsior Gas & Elec Fix Co—42 Warburton Ave
Haussler Wm A—12 Riverview Place
Kips John—28 Cedar St
Nugent Electric Co—42 Warburton Ave
Sillery & Hilbert—42 Warburton Ave
Snow W J—Crestwood
Stillman & Co J E—15 Warburton Ave
Stroh Electric Co—16 Riverdale Ave
Westchester Elect Equipment Co—73 Main St
Yonkers Lighting Fixture Co—73 Main St
Youmans Electric Co—45 Main St

THE EDISON MONTHLY

JULY

1916

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Table Cooking

During the summer months table cooking insures a maximum of comfort. No need for a hot coal fire in the kitchen.

An electric grill, a toaster, an egg boiler and a coffee percolator on the dining room table are sufficient to prepare an entire breakfast, or for that matter a luncheon or tea. These are but a few of the many devices which lighten the burden of summer housekeeping. Many others may be seen in our showrooms.

The New York Edison Company

At Your Service

General Offices: Irving Place and 15th St Phone: Stuyvesant 5600

Branch Office Show Rooms for the Convenience of the Public

424 Broadway Spring 9890 *124 West 42nd Street Bryant 5262
126 Delancey Street Orchard 1960 *151 East 86th Street Lenox 7780
10 Irving Place Stuyvesant 5600 *27 East 125th Street Harlem 4020
*362 East 149th Street Melrose 9900

*Open Until Midnight

Night and Emergency Call Farragut 3000

Tech.

AUG 30 1916

THE EDISON MONTHLY

VGA

AUGUST

1916

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Coal Again Going Up

Consumers of anthracite will be forced to pay an increase of between $9,000,000 and $12,000,000 the coming year, according to the Real Estate Board of New York. Such is the stringency that an investigation by the Federal Trade Commission is being petitioned

Fortunately, an increased coal cost will rest lightly on the thousands of Central Station Service users about the city. The real burden will fall upon such building managements as persist in making their own current. While the coal consumption of like electrical equipments varies, the amount frequently doubles and sometimes triples that called for by other building needs

The Central Station is able to meet the situation not only by buying in great quantities but by handling its equipment with the highest possible efficiency. The result is a steadily decreasing electrical rate that puts private plant maintenance in the class of positively wasteful operations

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THE EDISON MONTHLY

SEPTEMBER

1916

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Keeping Abreast of the Times

Nowhere else is the trend of modern times so emphasized as at The Electrical Exposition and Motor Show. Here business men, professional men, scientists, engineers, and the modern woman, will find something to their special interest.

Of greater scope and magnitude than ever, this tremendous educational exhibition will present the very newest in every branch of the wide field of electricity. Witness the highly important displays of the United States Government, the Army and Navy Department and the host of other interesting features. The exposition is of international importance and unless you are one of its spectators you cannot expect to keep abreast of the times.

If not Electrical—how?

The Electrical Exposition and Motor Show *of* 1916

Grand Central Palace October 11th to 21st

★ Anon.
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1916

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Freight Handling

Tremendous strides have been made in methods of handling freight and bulk material at shipping centres. The best results are being obtained where electrical machinery is used. Motor-driven hoists, conveyors, coal handling apparatus, stackers, elevators and winches are among the devices which are expediting the handling of bulky shipments.

This machinery is manufactured by the following firms:—

The De Mayo Coaling Co
The Michener Stowage Co
Link Belt Co
The Jeffrey Manufacturing Co
Brown Portable Elevator Co
The Alvey Ferguson Co Inc
Alvey Manufacturing Co
The Hilke Stacker Co
Mead Morrison Manufacturing Co
Shepard Electric Crane & Hoist Co
Lidgerwood Manufacturing Co
Lambert Hoisting Engine Co
Sprague Electric Works
The Yale & Towne Manufacturing Co
American Hoist & Derrick Co
Otis Elevator Co
The Shaw Electric Crane Co
Brown Hoisting Machinery Co
C W Hunt Co
Surety Engineering Co
Robins Conveying Belt Co

Further facts regarding devices and methods for handling such material have been compiled by this company. The information may be had on request. Our Power Bureau engineers are "At Your Service."

The New York Edison Company

General Offices: Irving Place and 15th St   Phone: Stuyvesant 5600

Branch Office Show Rooms for the Convenience of the Public

424 Broadway	**Spring 9890**	***124 West 42nd Street**	**Bryant 5262**
126 Delancey Street	**Orchard 1960**	***151 East 86th Street**	**Lenox 7780**
10 Irving Place	**Stuyvesant 5600**	***27 East 125th Street**	**Harlem 4020**
***362 East 149th Street**	**Melrose 9900**		

***Open Until Midnight**

Night and Emergency Call Farragut 3000

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THE EDISON MONTHLY

NOVEMBER

1916

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Your Coal Supply is Cut 33%

Car shortage, strikes and uncertain labor conditions have curtailed New York's coal supply by one-third. On the coal that is available prices have been advanced and deliveries delayed.

Manufacturers who are operating their own steam plants are the ones who will feel this shortage the most. Overhead expenses will climb still higher, and profits will be decreased.

But for the manufacturer who operates his factory by means of Central Station electric power the possibilities of a coal famine present no terror.

The cost of electricity remains the same. The supply is constant and quality and service never vary. Moreover the factory served by the Central Station is always more efficient from every view point and a maze of belting and shafting is unnecessary. Direct motor drive is possible, every machine operating at top speed at all times.

The New York Edison Company

At Your Service

General Offices: Irving Place and 15th St Phone: Stuyvesant 5600

Branch Office Show Rooms for the Convenience of the Public

424 Broadway Spring 9890
126 Delancey Street Orchard 1960
10 Irving Place Stuyvesant 5600
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*151 East 86th Street Lenox 7780
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*362 East 149th Street Melrose 9900

*Open Until Midnight

Night and Emergency Call Farragut 3000

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Tech. Div.

THE EDISON MONTHLY

DECEMBER

1916

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N. Y.

Frozen Water-pipes

The quickest, safest and most economical way to clear ice from frozen water pipes is to melt it by electricity.

We have special facilities for handling these emergency situations.

The work can be done without digging up the street, and the whole task is a matter of minutes, whereas the old method requires hours.

A telephone message to our nearest office will bring the apparatus without delay.

The New York Edison Compa

At Your Service

General Offices: Irving Place and 15th St Phone: Stuyvesant 5600

Branch Office Show Rooms for the Convenience of the Public

424 Broadway	Spring 9890	124 West 42nd Street	Bryant 5262
126 Delancey Street	Orchard 1960	151 East 86th Street	Lenox 7780
10 Irving Place	Stuyvesant 5600	27 East 125th Street	Harlem 4020
362 East 149th Street	Melrose 9900		

All Showrooms Open Until Midnight

Night and Emergency Call Farragut 3000

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THE EDISON MONTHLY

FEBRUARY

1917

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Building for the Future

Adequate wiring and side wall and floor outlets are essential in apartment house equipment. The increasing use of electrical household appliances is causing prospective tenants to demand the proper facilities for their operation. Unless the apartment owner offers such equipment, his properties will be less attractive and consequently less in demand.

Our representatives are always glad to consult with architects, owners or building superintendents on proper wiring, and to give advice as to the number and the best location for wall or floor outlets. Our wide experience in this field is "At Your Service."

The New York Edison Company

At Your Service

General Offices: Irving Place and 15th St Phone: Stuyvesant 5600

Branch Office Showrooms for the Convenience of the Public

424 Broadway	Spring 9890	124 West 42nd Street	Bryant 5262
126 Delancey Street	Orchard 1960	151 East 86th Street	Lenox 7780
10 Irving Place	Stuyvesant 5600	27 East 125th Street	Harlem 4020
362 East 149th Street	Melrose 9900		

All Showrooms Open Until Midnight

Night and Emergency Call, Farragut 3000

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THE EDISON MONTHLY

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MARCH

1917

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Central Station Service for Big Buildings

Three high-grade office structures in the neighborhood of Fifth Avenue and Forty-second Street, after comparing Central Station Service with Private Plant Operation have decided in favor of the former.

The New York Edison Company will supply electricity for light and power to the new buildings of the

Astor Trust Company
August Heckscher
Postal Insurance Company

The installations will aggregate 852 horsepower and 11,100 lights.

Central Station supply meets all requirements in these buildings; it will also prove economical, dependable and efficient for other buildings of this class. Let our engineers study your requirements.

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Branch Office Showrooms for the Convenience of the Public

424 Broadway Spring 9890 124 West 42nd Street Bryant 5262
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362 East 149th Street Melrose 9900

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THE EDISON MONTHLY

APRIL

1917

THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Additional Electrical Outlets

The rapidly growing use of electrical appliances in the home, such as vacuum cleaners, washing machines, vibrators, heating pads, toasters, electric irons, fans and the many other available devices, makes it desirable to provide conveniently located connections, under the table in the dining-room and around the baseboards of every room in the house.

Corresponding connections in the cornices of drawing and living rooms can be inconspicuously made, assisting greatly in solving the problem of adequately lighting pictures and objects of art.

The additional cost of wiring and appliances is comparatively slight. One's architect, electrical engineer, contractor or fixture manufacturer, can provide the necessary information, or we should be glad to have our experts freely consulted, without cost or obligation.

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Branch Office Showrooms for the Convenience of the Public

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THE EDISON MONTHLY

MAY

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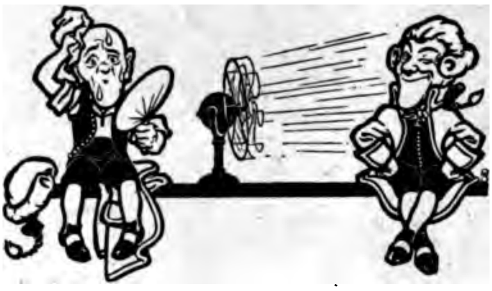
THE NEW YORK EDISON COMPANY
IRVING PLACE & 15th STREET N·Y·

Fan Time Approaches



If you spent last Summer without the comfort of an electric fan you will have little difficulty in recalling how unpleasant hot weather is.

In a few weeks more Summer will be upon us again. With the first breath of warm weather there will be a big demand for fans. Would it not be advisable to prepare yourself just a little in advance of the rush by ordering your fan equipment now?

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Wiring and Installation Contractors (Concluded)

East of Broadway and Fifth Ave (Con)

East 21st St 22—The Shultz Electric Co
East 22nd St 27—Hunt & Morgan
East 23d St 42—Kimball Elec Construction Co
East 23d St 131—G C Kastner
East 25th St 122—Isidor Fajans
East 28th St 114—Burkart Elec Co
East 28th St 34—S H Klein
East 28th St 118—John Jay Gallagher Co Inc
East 28th St 118—Covic Electric Co
East 28th St 132—Miller Electric Co
East 28th St 159—Behlert Elec Co
East 30th St 20—I Hoffman & Co
East 32nd St 19—Robert E Leve
East 34th St 144—S W Electric Co
East 35th St 217-19—Manhattan Engineering Co
East 37th St 207—Reis & O'Donovan Inc
East 45th St 70—Edwards Elec Contracting Co
East 45th St 70—J Livingston & Co Inc
East 45th St 70—Peets & Powers
East 53rd St 152—Alexander B Simpson
East 57th St 227—Morris Levi & Co
East 59th St 57—Stanley Ruth & Co
East 72d St 167—Edward J Dustman
East 94th St 168—B Gliddon
East 116th St 6—Harlem Electric Co
East 125th St 77—Peter Jansen
Essex St 62—Nathan J Feinberg
First Ave 220—S Newberger
First Ave 1481—Edward Zenker
Fourth Ave 373—Hatzel & Buehler
Frankfort St 26-30—J F Bidstrup & Co
Frankfort St 32-34—John Hammill
Front St 124—Charles Davidson
Fulton St 44—Ernest Klein & Bro
Fulton St 44—H A Murcke Co
Fulton St 62—Fulton Electric Co
Grand Central Terminal 1735—Geo V Cooper
Great Jones St 5—MacNutt & Steinert
Great Jones St 38—August Weber
John St 84—Alfred Whitely
John St 107—William Englert
Lexington Ave 47—William Hass
Lexington Ave 186—R E Denike Inc
Lexington Ave 368—E F Rusie
Lexington Ave 405—Nathan C Solomon
Lexington Ave 605—Bauer & Boland
Lexington Ave 767—Frise & Jantzer
Lexington Ave 1026—Kendelhardt & Morris Inc
Lexington Ave 1110—The M & C Electric Co
Lexington Ave 1245—Julius E Woelfe
Lexington Ave 1296—M Strompf
Lexington Ave 1307—Kirschen Bros
Lexington Ave 1438—Kenehan & Clancy
Madison Ave 1—Thomas L Dillon
Madison Ave 712—D M Rousseau
Madison Ave 826—N C Haynes
Maiden Lane 91—Weber & Jones
Mott St 83—Jos Addison
Nassau St 132—I A Adler Co
Park Ave 101—Comstock Associate Co
Park Ave 101—United Elect Construction Co
Park Ave 103—Stehlin-Miller-Henes Co
Park Ave 632—T J McGunnigle
Park Ave 1630—Wimpie Electric Co
Park Ave 1763—G V Gedroice & Co
Pearl St 119—Kelting Elec Co
Pitt St 92—Chas Kirschenbaum
Rivington St 151—Schneider & Kandel
Rose St 35-37—Geo Weiderman Elec Co
Stanton St 62—Sommer & Fuchs
Third Ave 208 and 348—Irving Kenner Co
Third Ave 1021—E Kalkan
Third Ave 1373—H Goldberg
Third Ave 1397—Chas J Eichman
Third Ave 1915—I Gabriel
Third Ave 2586—A F Eggers
Wall St 2—Edwin C Gee

Bronx

Altmann Leopold—1226 Washington Ave
Blackman & Guttman—226 East 144th St
Bogan Irving A—4192 Park Ave
Casey Hugh J—4206 Park Ave.
Dwyer M J—447 East 180th St
Edelmuth Jos—1046 Jackson Ave
Eggers Albert F—2586 Third Ave
Elkan Robert—897 Home St
Ellerbrock Herman H—379 East 138th St
Evans & Kaestner—939 Intervale Ave
Fox Leonard B—313 E 141st St
Hegeler F H—305 E 180th St
Howe J F—3113 Webster Ave
Israel & Co—2559 Third Ave
Josephson Joseph B—785 Forest Ave
Kuhn George—531 E 184th St
Landy Jacob—673 Elton Ave
Lowe J—835 E 152d St
M & M Electric Co—1643 Nelson Ave
Mathias J J—443 Willis Ave
Martin Robert C—815 E 180th St
Neilson Brothers—2580 Briggs Ave
Oehnke Paul—390 E 141st St
Pircher Frank S—339 E 140th St
Rosenfield & Harris—915 Whitlock Ave
Ross Edwin L—356 East 138th St
Sayles Electric Co—736 E 163d St
Schwarzler M & Son—460 E 167th St
Sladek Frank—3440 Third Ave
Starobin Jos—860 East 162d St
Strachan E A—435 E 155th St
Uhlendorf—5 Gouverneur Place
Vielberth Joseph F—1243 Taylor Ave
Woods Lewis H—2355 Jerome Ave
Yale Electric Co—650 Melrose Ave

Yonkers

Bryant Leslie D—Ethan Flagg Bldg Getty Sq
Excelsior Gas & Elec Fix Co—42 Warburton Ave
Haussler Wm A—12 Riverview Place
Kips John—28 Cedar St
Nugent Electric Co—42 Warburton Ave
Snow W J—Crestwood
Stillman J E & Co—15 Warburton Ave
Stroh Electric Co—16 Riverdale Ave
Westchester Elect Equipment Co—73 Main St
Yonkers Electric Co—7 Manor House Square
Yonkers Lighting Fixture Co—73 Main St
Youmans ElectricCo—45 Main St

JB JR